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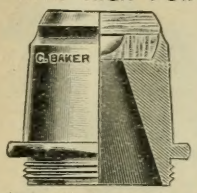

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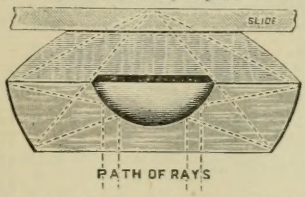

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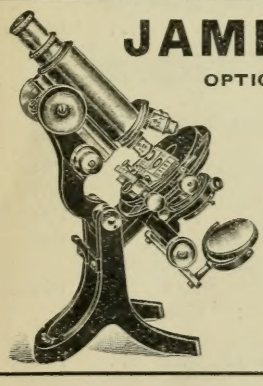

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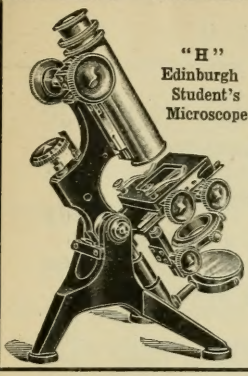

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Young, W. J., 226.

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TROPICAL DISEASES BULLETIN.

Vol. 17.] 1921. [No. 3.

AMOEBIASIS AND DYSENTERY.

Amoebiasis.

DARGEIN (G.). **Sur seize cas de dysenterie amibienne chronique observés a l'Hôpital Sainte-Anne, à Toulon.**— *Arch. Méd. et Pharm. Nav.* 1921. Jan.–Feb. Vol. 111. No. 1. pp. 65–74.

The routine treatment of amoebic dysentery consisted of subcutaneous injections of emetine together with subsidiary measures. An infusion of ipecacuanha root was employed for rectal lavage, as follows :—

Ipecacuanha radix	6–10 gms.
Water	to 500 cc.

This amount is evaporated down to 250 cc., then filtered, and 20 drops of *Tinct. opii* are added. An enema of this infusion is given twice daily. As an adjuvant to the emetine injection and the ipecacuanha enemata, the following paste is taken by the mouth :—

Syr. simplex	aa. 100 gms.
Glycerine	
Bismuth subnitrate (in powder) ..	
Powdered charcoal	
Ipecacuanha powder	4 gms.

This paste, in spite of its repulsive appearance, is well tolerated and can be given in graduated doses from two to ten tea-spoonfuls a day. Intravenous injections of neosalvarsan do not seem to exert any action upon the entamoeba or its cysts. The object in giving these injections should be rather to stimulate the general resistance of the body to amoebiasis.

P. H. Manson-Bahr.

TAKAKAME (Y.) AND ASADA (S.). [**Amoebic Dysentery found spread along the Coasts of the Inland Sea of Japan.**]—*Tokyo Iji Shinshi* (*Tokyo Med. News*). 1920. June 5 and 12. Nos. 2180, 2181 ; pp. 1077–8, 1126–33.

In view of the very intimate connexion with Korea, Formosa and other tropical regions, one may expect that Chûgoku, the west portion of the main island of Japan, especially its southern coast facing the Inland Sea, would be affected by amoebic dysentery. The authors describe 13 cases which had occurred in this locality, and draw the following conclusions : 1. Amoebic dysentery must always be taken

into consideration whenever any dysentery-like disease is to be diagnosed. Its existence seems to have been missed very often by practitioners in Japan proper. 2. The effect of emetine was very poor in serious cases. This is partly due to the fact that the patients were not properly treated in an early stage, and partly that too much has been expected as to the effect of emetine. 3. As to the reason why emetine showed poor results in serious cases, the large size of the ulcer on the intestinal wall, as suggested by AKASHI, seems to be one, but at the same time general enervation, anaemia, oedema, etc., affording a chance of bacterial attack seem to be another. 4. The disease relapsed in a patient who had eaten some raw fish. In this case the local hyperaemia of the intestinal wall caused by catarrh heightened the temperature as a consequence, and increased secretion of slime seems to have afforded ideal conditions for the amoebae to flourish. This is conceivable from the results recently obtained by YOSHIDA, according to whom a higher temperature is necessary to induce cyst-formation from encysted amoebae than from the vegetative form.

Hiroshi Ohshima.

YOUNG (M. L.). **A Case of Amoebic Dysentery in a Boy aged Three.**—*Lancet.* 1921. Jan. 15. pp. 122–123.

A child, aged three was admitted to Paddington Green Children's Hospital on November 3, 1920, with a history of persistent diarrhoea of six weeks' duration. The stools latterly had contained much dark blood and slime in which numerous dysentery entamoebae were demonstrated. Improvement set in immediately after the injection of very small doses of emetine—a total of $\frac{2}{3}$gr. being given in all. The child was discharged apparently cured. The source of infection remains a mystery, as no other cases have been recorded in this particular hospital since the termination of the war.

P. H. M-B.

ALLAN (William). **The Effect of Emetine on *Entamoeba histolytica* in Stools.**—*Jl. of Pharmac. and Exper. Therap.* 1920. Aug. Vol. 16. No. 1. pp. 21–33.

In determining the strength of emetine lethal for entamoebae *in vitro* all observers have been confronted with several difficulties for the following reasons: (1) The obligatory parasite dies soon after it leaves the body so that the element of time, so important in estimating the action of any drug, cannot be properly taken into account. (2) Death or fatal injury to the organism is hard to determine without disintegration. (3) The organism cannot be cultivated. (4) The alkaloid may combine with other organic matter in the stool and become inert. (5) Entamoebae buried in the mucus are well protected against water or normal salt solutions of emetine.

These difficulties have led to the use of cultures of saprophytic amoebae which can be exposed to the action of emetine for any length of time; an objection to this method of testing the toxicity is that substances highly injurious to free living organisms, such as parameciae, may have no effect on *Entamoeba histolytica*. Nevertheless, with the exception of the work of ROGERS, which is held to be erroneous, all workers have obtained approximately similar results. The author's experiments were made with solutions of emetine upon entamoebae

derived from various sources in coverglass preparations. In no instance did emetine affect the appearance or motility of these organisms in the stools in dilutions weaker than 1 : 2000 in the space of one to two hours; and often dilutions as strong as 1 : 150 failed to kill entamoebae in this space of time.

P. H. M-B.

Jamaica. **Six-Monthly Report on the Work carried out in the Government Bacteriological Laboratory, April-September, 1919.**—[Scott, (H. H.), Government Bacteriologist.] 59 pp. With 49 charts in text. [MS. Report. Received from Colonial Office.] A Study of Intestinal Protozoa in Jamaica, with Special Reference to the Entamoebae.

The objects of the investigation, which covers the greater part of this Report, were to determine the incidence of infection with various species of intestinal protozoa in Jamaica.

The figures are small: out of a total of 102 patients, *E. coli* was found in 47 per cent.; *E. histolytica* in 14·7 per cent.; *Giardia* in 35·29 per cent.; *Chilomastix* in 12·74 per cent., and *Balantidium* twice. These proportions are high, considering that none of the patients gave any history of recent intestinal trouble.

The Balantidium was found in a woman of 56 and in a man of 22; in neither was the parasite associated with any particular symptoms.

The greater part of the report is taken up with a resumé of the more recent literature of the incidence of the intestinal entamoebae, and also includes a very considerable amount of work upon the measurements of their cysts.

A curve made from measurements of 2,389 cysts of *E. histolytica* is multimodal with a mode between 7·5 and 8 μ, corresponding to the "small" variety with an average diameter of 7·7μ, a second between 10 and 10·5μ, another between 11 and 11·5μ, a fourth about 12μ, and a fifth between 13 and 13·5μ. Amongst his series Scott has not found one mode at 12·6μ, as recorded by Malins Smith and Matthews, but there is a marked one corresponding to the 11·6μ variety of Dobell and Jepps. Similar composite curves are given for 2,500 *E. coli* cysts. Here, instead of a unimodal curve between 16 and 17μ, it is distinctly bimodal, with modes between 17 and 18μ and 19 and 20μ.

P. H. M-B.

Shimura (Sôhei). **Ueber das Vorkommen der harmlosen Tetragena-amoeba, einer neuen Amoebenart. Mitteilung 1.** [Occurrence of a New Non-pathogenic Amoeba with 4-nucleated Cysts.]—*Mitt. a. d. Med. Fak. d. Kais. Univ. Kyushu.* Fukuoka, Japan. 1919. Vol. 5. No. 1. pp. 27–48. With 2 plates.

This elaborate paper contains an account of a new entamoeba of man, forming four-nucleated cysts closely resembling those of *Entamoeba histolytica*. It has so far been recorded in six cases, none of which exhibited any dysenteric symptoms. Both large and small vegetative individuals of this harmless tetragena entamoeba can be distinguished; the latter usually form cysts. The non-pathogenic variety can be easily differentiated from the pathogenic

by means of feeding and injection experiments on cats. Although 23 kittens became parasitized by these means and the vegetative organisms and their cysts were recognised in the faeces, yet none of them developed dysenteric symptoms. At autopsy the intestines were found to be quite normal.

P. H. M-B.

GAGLIO (E.). **L'ascesso epatico prima e dopo la scoperta dell'emetina.** [Hepatic Abscess—before and since Emetine came into use].— *Policlinico.* Sez. prat. 1919. July 13. Vol. 26. No. 28. pp. 883–884.

As showing the change brought about by emetine in the treatment of dysenteric liver abscess, the author gives the following table showing the results in cases treated in the surgical department of the Italian Hospital at Cairo.

	Cases treated.	Recovered.	Died.
1904	4	3	1
1905	7	6	1
1906	4	2	2
1907	7	3	4
1908	9	6	3
1909	16	8	8
1910	5	3	2
1911	12	4	8
1912	4	4	—
1913	9	7	2
1914	4	2	2
1915	7	5	2
1916	2	2	—
1917	4	3	1
1918	1	1	—

It will be seen that from 1904 to 1911, of 64 patients operated on, 35 recovered and 29 died, giving a mortality of 45·3 per cent., whereas from 1912, the year in which emetine came into general use, to 1918, of 31 cases, 7 died, giving a mortality of 22.6 per cent. On the question whether small abscesses can be cured by emetine injections alone the author writes: "Clinically we are convinced that they can, but when we have diagnosed the probable existence of a hepatic abscess and have seen the patient recover under emetine we have not felt justified in making an exploratory puncture on purely scientific grounds, and, conversely, when puncture has demonstrated the existence of an abscess we have not felt justified in delaying surgical intervention."

F. S. Arnold.

MEBANE (Tom S.). **Diagnosis and Treatment of Amebic Abscess of the Liver.**— *Jl. Amer. Med. Assoc.* 1920. Dec. 4. Vol. 75. No. 23. pp. 1566–1567.

These observations are based upon a careful study of fifty cases of liver abscess treated at the Santo Tomas Hospital, Panama, during a period of three years prior to August, 1917.

Rupture into other viscera occurred in the order of frequency into (1) the abdominal wall; (2) the subdiaphragmatic space; (3) the pleural cavity; (4) the lung, and (5) the intestinal tract.

Liver abscess may give rise to several well-marked clinical pictures depending upon its location and site. The most characteristic localizing symptom is the marked tenderness elicited by tapping over the liver. Jaundice—particularly anything more than a slight scleral tinting—should be regarded as being against a diagnosis of liver abscess. Nearly all the cases showed a definite leucocytosis averaging 18,000, but varying from 12,000 to 30,000. There are cases which simulate chest conditions—usually the result of a large liver abscess located in the dome of the liver ; the diagnosis may be further obscured by a pleural effusion consequent to irritation of the pleura. Usually the real condition can be detected by noting that the dulness does not follow the sinuous course of most pleural effusions—it is just in these cases that assistance can be procured from X rays.

Another type of case may simulate disease of the gall-bladder, the symptoms of which are produced by an abscess on the under surface of the liver, together with secondary peritoneal adhesions.

The high mortality, more than a third, in the present series of cases could be ascribed to the poor condition of the patients on admission. As a means of arriving at earlier diagnosis—so very important—the more extended use of hepatic puncture is recommended. As a matter of precaution all punctures were made in the operating room with the patient prepared for operation. When pus was found immediate operation was performed. When possible, the trans-thoracic method of approach is to be preferred, the direction of the needle of the successful exploratory puncture being taken as a guide. When approach through the chest is impossible, a rectus, or Kocher gall-bladder, incision may be employed.

P. H. M-B.

MALLORY (William J.). **Solitary Amebic Abscess of the Liver. Report of a Case occurring Thirty Years after Residence in the Tropics.** —*Jl. Amer. Med. Assoc.* 1920. Dec. 25. Vol. 75. No. 26. p. 1774.

The patient who is the subject of this communication, a man of 53, had resided for many years in Canada ; his sole experience of the tropics had been a short residence in " Central America," at the age of 22. In December, 1919, a mild intermittent fever with malaise and loss of weight, associated with leucocytosis, set in. At operation some four months later a solitary hepatic abscess, with sterile pus containing no entamoebae, was displayed on the anterior superior surface of the right lobe of the liver.

P. H. M-B.

LEGRAND (H.). **Deux cas d'amibiase (observée en Egypte) : 1°. Grand abcès périnéphrétique et abcès multiples de pyohémie amibienne ; 2°. Abcès amibiens de la plèvre, du poumon et du cervelet.**— *Bull. Acad. Méd.* 1920. Oct. 26. Vol. 84. No. 33. pp. 172–175.

Legrand, who has already published instances of amoebic abscesses of the brain, now cites other instances of aberrant amoebic abscesses in which the living organisms were plentiful in the pus.

The first case was a large left perinephritic abscess together with pronounced intestinal amoebiasis. The pus was sterile.

In the second case, at autopsy amoebic abscesses of the pleura, lung, and cerebellum, without any trace of a similar accumulation in the liver, were present. Bacteria as well as amoebae were found in the pus. The right lung contained a large abscess in the upper lobe. In this case there was no history or clinical evidence of dysentery, though a few scarred ulcerations were found in the rectum.

P. H. M-B.

YOSHIDA (Kazuyoshi). **Reproduction *in vitro* of *Entamoeba tetragena* and *Entamoeba coli* from their Cysts.**—*Jl. Experim. Med.* 1920. Sept. 1. Vol. 32. No. 3. pp. 357–379. With 6 plates.

This paper embodies the results of two years' work upon attempts to culture dysenteric amoebae *in vitro*—the outcome of a suggestion by INADA that good results might be obtained by the use of cysts rather than the vegetative forms.

After some preliminary work Yoshida claims to have demonstrated the process of reproduction of the cysts of *Entamoeba tetragena* (sic) and *Entamoeba coli*.

Reproduction of these two amoebae takes place by a new process of fertilization, *i.e.*, a kind of autogamy ; schizogony does not occur. A number of preliminary experiments, undertaken to establish some test for the viability or otherwise of amoebic cysts, tended to show that the eosin-staining test of KUENEN and SWELLENGREBEL is not invariably an accurate one. It was found that a solution of 2 per cent. of hydrochloric acid acting for five minutes does not kill the majority of amoebic cysts. The method for obtaining a concentrate of cysts for experimental purposes is as follows :—

A portion of faeces—the size of a thumb joint—is placed in a beaker and covered with distilled water, sterile isotonic saline, or Ringer's solution, so as to form a homogeneous mixture of 40cc. The water from this mixture is filtered through gauze and the filtrate distributed in test tubes and centrifuged by a hand centrifuge (an electric centrifuge is not suitable.) The cysts are then extracted from the sediment by a method based on differences in the specific gravity of the cysts. The sediment is placed in a sterile solution with a specific gravity of 1,080, that of the cysts themselves ranging from 1,060 to 1,070. The cysts therefore rise to the upper layer of the water, are removed by means of a sterile pipette, and are deposited in a sterile test-tube. Distilled water is then added until the specific gravity is 1050 and the mixture centrifuged. The massed cysts in the sediment are next placed for five minutes in a 2 per cent. hydrochloric acid solution in order to destroy any adherent bacteria ; this is then removed by centrifugation and the cysts introduced into the water of condensation of the culture medium. The composition of the latter is, two parts of a 2 per cent. agar and one part of defibrinated horse blood, placed in an autoclave until completely dissolved, after which it is cooled at a temperature of 60° C. While still fluid, defibrinated horse blood is added, and the tubes are slanted and cooled.

Cultivation experiments have been repeated thirty times with the result that 11 trials with *E. tetragena* and seven with *E. coli* were successful. Cultures are kept at temperature from 28° to 30° C. Morphological changes in the two species of amoeba were similar.

Reproduction from the cysts takes place particularly on the third day, though unfortunately the newly-formed amoebae die frequently from the fourth to sixth days from the effects of putrefaction of the

medium. Under favourable conditions the majority of the cysts reproduce readily *in vitro*.

After part of the cyst wall has been gradually broken, the young amoeba crawls out by means of its pseudopodia. The numerous bud-like pseudopodia extended at this stage have given rise to the description made originally by CASAGRANDI and BARBAGALLO that a process of schizogony was taking place. Dead cysts may be distinguished from living ones by their loss of refractility and can be stained with eosin.

Only a single individual [cf. this *Bulletin*, 1916. Vol. 8.pp. 135–6, WOODCOCK and PENFOLD, of whose work the author does not seem to be aware] emerges from the parent cyst, possessing at first one or two fusion nuclei as the case may be. In dead cysts the granular protoplasm may become divided into a number of unequal parts, thus giving rise superficially to an appearance of schizogony as described by DARLING. The size of the newly hatched vegetative forms of both species of amoebae *in vitro* was never less than 8μ, so that it is open to doubt whether the small races of *E. coli* in reality belong to this species. Autogamy of the nuclei within the cyst wall takes place with the formation of one or two fusion nuclei or synkaria. Four nuclei may take part in the process in *E. coli* and two to four in *E. tetragena*. With the diminution in the amount of nuclear chromatin the synkarion at first assumes a spherical shape, but later it has a structure resembling that of the vegetative form. The nuclei which do not participate in the synkarion shrink and degenerate.

The newly created amoeba may be only half the size of the original cyst and shortly after reproduction takes in various bacteria as food, and on the fourth day of development attains the size of the normal vegetative forms found in the faeces. On the fifth day the bacterial contamination and the decomposition of the medium are so pronounced that all the amoebae disappear.

The conclusion is drawn that the daughter nuclei of the cyst stage correspond exactly to the gamete nuclei of other protozoa ; the difference between these gametes and those of other protozoa consists in the fact that in this case no differentiation between male and female can be observed as they are enclosed in a common cytoplasm.

On two occasions the author encountered in the culture medium a *coli* cyst having more than eight nuclei. Heterogamy, or the fusion of two amoebae, as HARTMANN and WERNER claim to have observed, does not take place. If such an approximation of the individuals does occur, no union of the nuclei takes place and the process should be regarded as plasmogony.

The paper is illustrated by six plates consisting of 77 figures and rather indistinct microphotographs.

[It would be well to await confirmation before accepting the details of the author's observations.] P. H M-B.

YOSHIDA (Kazuyoshi). **Ueber die Encystierung der Dysenterieamöben in vitro.** [Encystation of the Dysentery Amoebae in vitro].—*Mitt. a.d. Med. Fak. d. Kais. Univ. Kyushu.* Fukuoka, Japan. 1919. Vol. 5. No. 1. pp. 49–79. With 9 plates, and 1 text-fig.

In this paper the author covers much the same ground as in the *Journal of Experimental Medicine* [above]. He describes more fully the early stages of his numerous attempts to cultivate the dysentery amoeba *in vitre*.

The source of supply was a patient who had been under observation for a number of years and whose stools contained large numbers of active entamoebae, but no cysts. The most satisfactory culture medium proved to be one part of horse serum with four parts of Ringer's fluid and a certain quantity of red corpuscles.

A special apparatus had to be devised for the culture of these organisms. It consisted of a large flask containing the nutrient fluid and connected with a series of glass centrifuge tubes, each containing a small portion of amoeba-containing mucus, in such a manner that the nutrient stream flowed continuously through four of them in serial order. From time to time small quantities of blood-stained mucus were removed and examined either in the fresh state or stained in various ways.

The whole apparatus is kept at a constant temperature of from 22—27° C.

As a result of 25 separate trials on these lines it was found that the lifespan of the dysentery amoeba outside the body varies from 36-72 hours.

In all the stages observed the demarcation between endo- and ecto-plasm remains quite distinct.

Almost invariably in the sediment of the tubes Yoshida found two kinds of active amoebae, one large and one much smaller; the latter eventually become transformed into cysts.

The principal changes take place a few hours after incubation has commenced and principally concern the nucleus. The karyosome swells up and becomes much enlarged. In 15 to 20 hours' time these large vegetative individuals become transformed into smaller active forms. The formation of chromidia in the endoplasm of the amoeba Yoshida regards as an evolutionary phase, not a degenerative process; and rather that their presence is essential to encystment.

The derivation of the cyst wall is by no means clear, though Yoshida thinks it is derived from the nuclear chromatic elements dissolved in the protoplasm.

Four nucleated cysts appeared in one instance after 24 hours' incubation. The author has given particular attention to the nuclear changes in the vegetative stages as well as in the cysts, and he has illustrated them by numerous figures. Many of the interpretations appear to be purely conjectural.

Considerable attention has been devoted to the study of forms described as transitional or atypical; by this is meant active amoebae possessing either abnormal nuclei or protoplasmic structure. They possess but feeble vitality and either die off or rapidly become transformed into cysts; on the other hand they may under favourable circumstances develop once more into typical and characteristic entamoebae. From a consideration of this interpretation of the appearances observed during his experiments Yoshida has convinced himself that the *Entamoeba tetragena* originally described by HARTMANN is none other than the atypical or degenerative forms of *Entamoeba histolytica*.

The origin of the central vacuole is a matter for speculation; it would seem to be similar to that of the chromidial bodies, namely, from substances given off by the nucleus.

[This is a discursive and lengthy paper; the illustrations, comprising in all 129 figures, are somewhat crudely executed and are consequently difficult to follow.] P. H. M-B.

Brug (S. L.). *Endolimax kueneni* **n. sp., Parasitic in the Intestinal Tract of the Monkey,** *Macacus cynomolgus.—Parasitology.* 1920. Dec. Vol. 12. No. 4. pp. 378–379. With 1 plate.

This amoeba, which closely resembles *E. nana,* was found at autopsy ; the intestine itself was normal.

The round forms measured 7–12μ. The cysts contained iodophilic substance as in Iodamoeba ; in size they are 7–10μ. The cyst nuclei are never more than two in number and have the massing of the chromatin characteristic of the genus *Endolimax* ; the inclusion of darkly-staining protoplasmic areas serves to differentiate them from iodine-cysts.

P. H. M-B.

Allan (William). A Review of the Recent Work on Amoebic Dysentery. —*Boston Med. and Surg. Jl.* 1920. Nov. 4. Vol. 183. No. 19. pp. 545–548.

An epitome of recent literature, all of which has been abstracted in this *Bulletin* during the last five years, hardly calls for extended notice.

P. H. M-B.

Bacillary Dysentery.

Holst (Peter F.). **Dysenteri.**—*Norsk Mag. f. Laegevidensk.* Vol. 82. p. 104.

An account of a very small but potent epidemic which occurred at Röken. A mother and two children were admitted to hospital with dysenteric symptoms. A couple of days later a woman of 84 years of age, who had previously visited the family, was seized with the same symptoms, and later on a man also. Of six persons attacked, four died—after four, five, seven and eight days' illness respectively.

The little epidemic appears to have been started by a two-year old child falling into a kind of well which was not used for the supply of drinking water. The day afterwards the child was seized with vomiting and bloody diarrhoea. Six days later an eight-year old brother and the mother fell sick, and a couple of days later a six-year old sister. The three children died. Bacteriological examination of the stools proved the disease to be bacillary dysentery, but further report on the kind of dysentery bacilli present is reserved until a later date.

E. E. Atkin.

Stokes (Adrian) & Bigger (J. W.). **A Short Account of Dysentery in Dublin in the Autumn of 1919.**—*Dublin Jl. of Med. Sci.* 1920. Mar. Fourth Series. No. 1. pp. 3–8.

In August, 1919, an epidemic of bacillary dysentery, the first recorded in modern times, broke out in Dublin. In all, 186 cases with 19 deaths were notified. The pathological anatomy in the autopsies was characteristic of bacillary dysentery. Out of 139 patients, whose faeces were examined bacteriologically, the dysentery bacillus was isolated in 76, or in 59·6 per cent. The majority were Shiga infections ; Flexner's bacillus was encountered once only. Serological reactions were found to be most regular ; the highest titre with the homologous organisms being 1 : 80. No difficulty was experienced in isolating or identifying the organisms, and a rough method of preliminary agglutination of the colonies with specific antiserum was employed.

P. H. M-B.

JENNICKE (Eugen). **Zur Ruhrepidemie in Thüringen.**—[Dysentery Eperdemic in Thüringen.]—*Deut. Med. Woch.* 1920. Nov. 18. Vol. 46. No. 47. pp. 1308–1309.

This paper refers to the difficulty in diagnosing all cases of bacillary dysentery by actual isolation of dysentery bacilli from the faeces. The author adverts to his experiences during the war—often he succeeded in making successful cultures from the intestinal mucosa in fatal cases in which faeces-culture had failed.

The present communication deals with an outbreak of 108 cases with 19 deaths in an isolated country village—the infection probably having been introduced by a soldier returned from a French internment camp after 3 years' imprisonment. The infection (Shiga's bacillus) proved to be a virulent one, and spread with great rapidity.

P. H. M-B.

BORRELLO (F. P.). **Osservazioni cliniche batteriologische sulla dissenteria infantile con speciale riguardo alla vaccinoterapia.**—*Pediatria.* 1919. Sept. Vol. 27. No. 9. pp. 550–566.

The paper consists in the main of clinical histories of 24 cases of bacillary dysentery in children which came under the author's care in the pediatric clinic of the Royal University of Palermo during the years 1913–1918. The Shiga bacillus was found in the faeces of 19 of the patients, the Flexner in four, and in one case bacteriological examination gave a negative result. Vaccine treatment is first reported in 1917. Of the 24 cases, 14 were treated without vaccine with 11 deaths. One case left hospital improved, and two were removed from hospital by their parents showing no improvement. Ten cases were treated by vaccine with two deaths, four cures, three improved and one removed by parents. The vaccine was prepared by the method proposed and applied by DI CRISTINA for Eberth's bacillus (*Pediatria* 1916).

F. S. A.

TAHARA (Shugo). [**Bacteriological Examinations of Child's Dysentery in Tokyo.**]—*Jika Zasshi* (*Jl. of Pediatrics*). 1920. Jan. 20. No. 236. pp. 29–75.

From his examinations extending over seven years (1912–18) of 2,316 children of ages ranging from 1–15 in Tokyo, the author draws conclusions as follows (illustrated with numerous tables) :—

1. There is no universal prevalence of the disease, but it occurs in isolated cases, though the number seems to increase year by year.

2. Only relatively few of the cases are reported as dysentery or "ekiri," and most of the others are diagnosed as acute enteritis, acute meningitis, tubercular meningitis, etc., though dysentery bacilli could be demonstrated from these cases as well.

3. Climatic changes run parallel with the results of bacteriological examinations (maximum prevalence from July to September). At a certain temperature the susceptibility increases, being due to decrease of the resisting power of the children.

4. Death occurs on the second day of attack in a majority of cases, and less frequently on the first, third, fourth and fifth days. After the sixth day it occurs still more infrequently. Thus it will be seen that a proper treatment on the very day of attack is most important.

5. The greatest number of cases are found in the four year old children. Only a very few cases occur among yearlings, while on the other hand it is also infrequent among the children older than five.

6. In view of the fact that cases of suspected dysentery are increasing year by year and a number are incorrectly diagnosed, the real figures for children's dysentery must be several times greater than that reported.

Hiroshi Ohshima.

Albert (José) & Horilleno (Fé). **Clinical Analysis of One Hundred Cases of Enterocolitis with Especial Reference to Edema, Dehydration, and Putrid Odor of Stools.**—*Philippine Jl. Sci.* 1920. July. Vol. 17. No. 1. pp. 27–30.

These hundred cases were observed in 1919 amongst young children. From statistics supplied we learn that ileocolitis, or "dysentery," accounted for one quarter of the total admissions during the period under review.

Oedema proved to be an unfavourable sign; it was present in 37 cases in all, 12 of whom died. Dehydration, or desiccation, is also a sign of unfavourable prognosis.

Putridity of the stools is attributed to gangrenous colitis; 11 such were noted, of which eight were fatal.

P. H. M-B.

Almagia (Marco). **Epidemia dissenterica da** *Bacterium coli* **agglutinabile con siero Flexner.**—*Ann. d'Igiene.* 1919. Oct. 30. Vol. 29. No. 10. pp. 685–689.

Towards the end of the summer of 1917, the author states, samples of muco-sanguinolent faeces began to arrive at the bacteriological laboratory of which he was director, with the request that they should be examined for amoebae or bacilli of dysentery. The result was in every case negative as regards both organisms. As the number of specimens received steadily increased, the author visited some of the field hospitals from which the material was being received, and satisfied himself that the cases there were clinically cases of dysentery. The great majority of the patients recovered slowly. Microscopic examination of the bowel, however, in one of the fatal cases showed that the ulcers present involved both the mucosa and the sub-mucosa. By the smear method various micro-organisms were isolated, one of which was agglutinated by serum from the patients, but, still more markedly, by the serum specific for B. Flexner. Its characters, morphological, cultural and biological, placed it in the coli group and away from that of the dysenteric bacilli.

F. S. A.

Rey (Jules F.). **A Fatal Case of Dysentery in an Adult caused by Morgan's Bacillus.**—*Practitioner.* 1920. June. Vol. 104. No. 6 (No. 624). pp. 466–467.

The patient died of acute diarrhoea following parturition; at autopsy a multitude of small ulcers eroding the muscular coats were found. Beyond the fact that Morgan's bacillus No. 1 or No. 14 (*sic*) were reported as present in the faeces before death "by one of the best London pathological institutes," there is nothing to convince one that this organism was the cause of death.

P. H. M-B.

LEMANN (Isaac Ivan). **A Case of Bacillary Dysentery with Pseudomembrane in the Vagina and Oedema of the Abdominal Wall.**—*Jl. Amer. Med. Assoc.* 1920. Dec. 18. Vol. 75. No. 25. pp. 1716–1717.

The case on which this paper is based appears to be a straightforward bacillary dysentery due to Shiga's bacillus, but certain curious complications were present. There was marked oedema of the abdominal wall, especially in the right upper quadrant. A vaginal examination revealed oedema of the walls as well as a croupous pseudomembrane resembling that commonly seen at autopsy in bacillary dysentery. Cultures of Shiga's bacillus were obtained from this membrane as well as from the cervix. The blood serum also strongly agglutinated the same organism.

P. H. M-B.

BUTTENWIESER (S.). **Ein Fall von Encephalitis haemorrhagica bei Dysenterie.**—[Case of Haemorrhagic Encephalitis associated with Dysentery.]—*Muench. Med. Woch.* 1920. Dec. 17. Vol. 67. No. 51. p. 1472.

A record of a case which developed encephalitis, possibly encephalitis lethargica, during the course of a severe attack of dysentery. Death took place in coma. At autopsy the brain presented the pathological picture of a haemorrhagic encephalitis and the large intestine necrotic changes of a marked degree, so characteristic of bacillary dysentery.

P. H. M-B.

DOLD (Hermann) & FISCHER (Walter). **Ein Fall von natürlich erworbener, bazillärer Dysenterie beim Hunde (mit gleichzeitiger Schistosomiasis, Ankylostomiasis und Filariosis).** — [Case of naturally acquired Bacillary Dysentery in the Dog (coincident with Schistosomiasis, Ankylostomiasis and Filariasis.]—*Cent. f. Bakt.* 1 Abt. Orig. 1920. Nov. Vol. 85. No. 3. pp. 198–206.

This paper, in which the occurrence of bacillary dysentery in the dog was first reported, was ready for publication in 1915, but was lost. It is therefore published in the original without any additions ; since it was written these investigators have found four more cases. [See this *Bulletin*, Vol. 9, p. 435.]

In the mucous stool the ova of *S. japonicum* and of Ankylostoma were also found, in addition to embryos of *Filaria immitis* in the blood. At autopsy the Shiga-Kruse bacillus was isolated without difficulty from the intestinal mucosa, which presented the inflammatory lesions characteristic of bacillary dysentery.

This discovery opens up questions of considerable magnitude—for example, Are the dysenteric symptoms so often seen in dogs in tropical countries due to the dysentery bacillus, and do these animals constitute a reservoir of infection for man ?

P. H. M-B.

ANGELO (Petrucci). **La diagnosi batteriologica della dissenteria da Shiga.**—*Policlinico.* Sez. Prat. 1919. Dec. 14. Vol. 26. No. 50. pp. 1483–1486.

A detailed description of the author's methods of examination for the Shiga bacillus. He states that in the laboratories under his

direction during the war positive results were obtained in 80 per cent. of the suspected cases examined, and that the percentage would probably have been higher but for the fact that many of the specimens sent for examination were badly put up. He lays stress on the importance of examining recent specimens of faeces and in an early stage of illness, before the Shiga has succumbed to the competition of the other intestinal flora.

F. S. A.

Davison (Wilburt C.). **Divisions of the So-called Flexner Group of Dysentery Bacilli.**—*Jl. Experim. Med.* 1920. Dec. 1. Vol. 32. No. 6. pp. 651–663.

The conclusions arrived at are based upon the study of 77 cultures isolated from clinical dysentery in children, 12 from dysentery cases in the American Expeditionary Force, and stock cultures of the five English types of Flexner bacilli. Broadly speaking, the main points are that certain ill-defined groups of Flexner bacilli exist, but are by no means sufficiently demarcated to warrant the use of separate names to designate each one. On the whole, Davison is inclined to accept Murray's classification of the V-Z types and to add to them yet others. To avoid confusion all mannitol-fermenting dysentery bacilli should be called *Bacillus dysenteriae* Flexner. The results of the agglutination reactions of the patient's serum may be expressed in the same terms as the serological typing of the organisms from the stools. Fermentation itself is less constant and gives rise to more divisions of bacilli. Polyvalent, diagnostic, and therapeutic sera are practically worthless, unless they include antibodies for the more common of these types. Probably the best polyvalent therapeutic serum in use at present available has a very low titre for the X antigen.

P. H. M-B.

Matsuo (Iwao) & Izawa (Tamekichi). [**A Contribution to the Classification of Dysentery Bacillus.**]—*Kyoto Igaku Zassi.* 1920. Nov. Vol. 17. No. 11. p. 90. [English summary.]

The Y type of dysentery bacillus, isolated and cultured for a considerable period (25–90 days) in an inorganic medium, containing 1 per cent. of maltose, saccharose and dextrin, acquired the property of fermenting maltose and lactose. From the serological and immunological standpoints the new types thus created are identical with the original strain. The carbohydrate classification of these organisms is therefore of no value; the Y type can be converted into the Flexner and *vice versa*.

P. H. M-B.

Kirschner (I.) & Segall (I.). **Zur Bakteriologie der Ruhrerkrankungen des Jahres 1920 in Wien.**—[Bacteriology of Dysentery in Vienna in 1920.]—*Wien. Klin. Woch.* 1920. Dec. 23. Vol. 33. No. 52. pp. 1125–1126.

The experience of the authors was gained in the 1920 epidemic of bacillary dysentery in Vienna. Impressed with their failure to isolate dysentery bacilli from a large number of faecal specimens when transmitted to the laboratory, as well as by reports of Friedemann, who claims to have obtained positive results in 100 per cent. of his

cases by means of rectoscopic culture [see this *Bulletin*, Vol. 11, p. 259], they decided to give the latter method a trial. From stools transmitted to the laboratory positive results were recorded in only 6 per cent.; from freshly passed faeces cultured in hospital the figure was 39 per cent.; while from mucus obtained by the proctoscope successful isolations were recorded in 65 per cent. Examples of the more familiar types of dysentery bacilli —Shiga, Flexner, Y, Strong's bacillus—and also in certain cases SCHMITZ's recently described type were recognized. They also suggest that *Bacillus faecalis alcaligenes* plays a rôle in producing dysenteric symptoms.

P. H. M-B.

MAYMONE (Bartolo). **Variazioni biologiche del bacillo di Shiga osservate nel corso di una epidemia di dissenteria bacillare.**— [Biological Variations of the Shiga Bacillus in the course of a Dysentery Epidemic.]— *Ann. d' Igiene.* 1919. Oct. 30. Vol. 29. No. 10. pp. 653–672.

The author states that in the course of an epidemic of dysentery in the Bologna Army Corps in the summer and autumn of 1917, he repeatedly isolated from the faeces of patients an organism agreeing in morphological and cultural characters, agglutinability by specific serum, and in its effect on rabbits, with the typical Shiga bacillus. Serum diagnosis, in the case of a large number of patients from whose faeces the specific organism was not isolated, showed almost always that the Shiga bacillus was the pathogenic agent, so that it came to be regarded as the sole agent at work. In many cases, however, the author isolated, besides typical Shiga bacilli, others which differed from it in their behaviour to specific serum and in certain biological and cultural characters. The author prefers to regard these, not as fresh types, but as simple biological variations of the Shiga bacillus. He divides the atypical organisms found into four classes :—

1. Bacilli temporarily devoid of agglutinability with specific anti-Shiga serum.
2. Bacilli producing a pellicle on the surface of their culture media.
3. Bacilli inactive as regards monoses and other sugars.
4. Bacilli giving fluorescence with neutral red and blackening with neutral lead acetate.

The author regards the cultural and serological differences as due to variation of the Shiga bacillus within the intestine. The serum of many of the patients readily agglutinated typical Shiga. He considers the pathogenic effect on the rabbit most useful in the study of these strains, such effect being constant whatever variation the strain has undergone.

F. S. A.

SORDELLI (A.). **Sobre la medicion de la Toxina disenterica y su antitoxina en los pajaros,** (*Sycalis Arvensis.*).—*Rev. Inst. Bacteriolog.* 1920. May. Vol. 2. No. 5. pp. 665–672.

——. **Emploi de petits oiseaux pour mesurer l'activité de la toxine dysentérique et titrer le sérum antidysentérique.**—*C.R. Soc. Biol.* 1920. July 31. Vol. 38. No. 27. pp. 1245–1246.

DOERR and KRAUS recommend rabbits, while KOLLE prefers white mice, as the most suitable laboratory animals for estimating the activity of dysenteric toxin. In South America (Buenos Aires),

Sordelli has lately used a small bird, which is very common in South America, and is known colloquially as "misto" (*Sycalis luteola*, vel. *S. arvensis*). Individuals vary in weight from 15 to 20 gms. The injections are made into the pectoral muscles with a fine hypodermic needle. The minimum lethal dose (M. L. D.), for this bird is about 0.01 cc., and takes effect in two days. *Sycalis luteola* is, therefore, two and a half times more sensitive than the rabbit. As a method of titration of anti-dysenteric serum, this bird behaves in much the same manner as does the guinea-pig in the estimation of anti-diphtheritic units.

P. H. M-B.

Tryon (Geneva). **The Leukocytic Reaction in a Paratyphoid Dysentery and following Vaccine Inoculations.**—*Boston Med. and Surg. Jl.* 1920. Dec. 2. Vol. 183. No. 23. pp. 643–648.

The information contained in this paper was obtained during an inquiry into a dysentery epidemic in Boston in 1915. The responsible organism belonged to the "paratyphoid enteritidis group," which could not be identified with any of the well-known members. Subcutaneous vaccine therapy with emulsions of this organism brought about a polymorphonuclear leucocytosis and coincided with the cessation of diarrhœa. In the few cases in which this treatment was given a trial the results were satisfactory.

P. H. M-B.

Loewenthal (Waldemar). **Erklärungsversuche für die Ruhragglutination durch Schwangerenserum.** [Attempts to explain the Agglutination of Dysentery Bacilli by the Serum in Pregnancy.] *Ztschr. f. Immunitätsf. u. Experim. Therap.* 1 Teil. Orig. 1920. Dec. 30. Vol. 30.
No. 5–6. pp. 439–467. With 1 text-fig.

The main theme of this paper has already been treated in this *Bulletin*, Vol. 14, pp. 323–324. The serums of a high proportion of parturient women agglutinate the Y bacillus; this phenomenon is to be ascribed to stimulation of the normal agglutinins. Experiments upon rabbits, previously inoculated with dysentery organisms, proved that existing agglutinins were not stimulated by pregnancy.

The presence of lecithin or cholesterin in the bloodstream was proved to exert no influence upon agglutination; it is in no way connected with Kottmann's or Abderhalden's reactions or with an undue proportion of proteids in the serum.

Probably this agglutination is connected in some manner with the reaction of the serum.

P. H. M-B.

Thjotta (Th.). **On the So-Called Neisser-Wechsberg Inhibiting Phenomenon in Bactericidal Immune Sera.**—Reprinted from *Jl. of Immunology*. 1920. Jan. Vol. 5. No. 1.

In 1901 Neisser and Wechsberg observed that, whereas small or medium doses of bactericidal sera exhibited bactericidal functions with

the homologous strain, larger doses had no such effect. The explanation of this paradoxical serum reaction was sought for in the richness of the immune serum in bactericidal amboceptors. The author finds the NEISSER-WECHSBERG phenomenon especially well-marked in the case of the dysentery bacilli and to be in this case of a specific nature. It is to be found in active as well as in inactive sera; it develops during immunization, and is present in dysentery-immune serum in a high degree. In active sera from immunized animals, without the addition of complement, the phenomenon shows itself as a complete abolition of the normal bactericidal action.

The inhibition is due to antibodies which are formed during the immunization or during natural disease. These specific antibodies, which are not identical with agglutinins, bacteriolysins, or precipitins, exhibit a marked tendency to absorb complement, and to withdraw it from the bactericidal antibodies. The titre of the inhibition is directly proportional to the dose of complement employed. With a small dose of the latter, smaller doses of inhibiting antibodies can be demonstrated than with a larger dose of complement. The inhibiting antibodies do not affect the bacteria themselves, nor can they be removed from the serum by absorption with an emulsion of the homologous bacilli.

P. H. M-B.

MIXED AND UNCLASSED DYSENTERY.

HUGHES (Basil) & BANKS (H. Stanley). **Immediate Surgical Complications of Dysentery.**—*Brit. Med. Jl.* 1920. Dec. 18. pp. 934–936.

The immediate complications of dysentery, including both the amoebic and bacillary disease, which may require surgical interference may be classified as follows:—Acute hepatitis; acute liver abscess; perforation of the colon (gangrenous colitis); gangrenous proctitis; synovitis with effusion into the larger joints.

There is little new information in this paper, though the authors cite instances illustrative of each of these complications. Acute hepatitis yields readily to emetine treatment without exploration. Surgical treatment of acute liver abscess was not invariably successful; nine cases were operated upon with four deaths. Eusol drainage through the drainage tube proved undesirable as autolysis of the hepatic tissue resulted. Quinine irrigation, on the other hand, had an excellent effect. Aspiration in the sites usually recommended proved useless, the pus proving too thick to be drawn into the syringe. Perforation of the colon with gangrenous colitis was invariably fatal and was noted in both the amoebic and in the bacillary disease, but most of the cases in which this fatal event took place were complicated by recurrent malaria. Operation is useless. Gangrenous proctitis may arise primarily, or be merely an extension of the gangrene of the colon. Colotomy appears to be the only possible treatment.

By far the most satisfactory treatment of synovitis is early aspiration and the injection of 5cc. of ether into the joint cavity during the acute stage. A general anaesthetic is usually required. The joint should be kept at rest and, when the acute stage has subsided, firmly strapped with Scott's dressing.

P. H. M-B.

VALLARDI (C.). **Dissenteria amebica. Enteropatie da flagellati e da coccidi.** [Amoebic Dysentery. Intestinal Affections due to Flagellates and Coccidia].—*Ann. d' Igiene.* 1920. Jan. & Feb. Vol. 30. Nos. 1 & 2. pp. 18–27 ; 128–134. With 1 chart.

The author embodies in this paper the result of his observation of dysentery among troops in Macedonia during the two years in which he held the post of Director of the Department of Bacteriology and Prophylaxis attached to the Italian army on that front.

During the first two years of the allied occupation of Macedonia there were, among the allied troops, other than Italian, 28,000 cases of dysentery ; of these 80·58 per cent. are classed as " clinical dysentery," that is to say, there was in these cases no laboratory examination of faeces or its result was negative, 9·68 per cent. were amoebic, and 9·74 per cent. bacillary dysentery. From May to October of 1918 there were among the allied forces 17,987 cases of dysentery, of which 66·3 per cent. were " clinical," 27·5 per cent. bacillary, and 6·2 per cent. amoebic. The author is of opinion that in the epidemic of 1917 the proportion of bacillary cases was much higher than has been supposed or than, owing to the want of laboratory control in the majority of cases, appears from the figures. Malaria and scurvy were the diseases most often observed by the author in association with dysentery. A diagnosis of pure amoebic dysentery requires for its justification a negative result from repeated cultural examinations for dysenteric bacilli and the proved absence from the patient's serum of agglutinins specific for these germs.

F. S. A.

WOODCOCK (H. M.) **Dysentery Statistics : A Reply to Dr. Wenyon's Letter.** [Correspondence].—*Jl. Roy. Army Med. Corps.* 1920. Nov. Vol. 35. No. 5. pp. 426–428.

This note continues the correspondence already referred to [see this *Bulletin*, Vol. 17, p. 34].

Woodcock stresses the point that the time period and its relation to the chances of isolation of the dysentery bacillus has been much exaggerated. He contends that the differences between two days and five to seven days from the commencement of the illness does not by any means signify the difference between success and failure to a competent bacteriologist, and consequently this factor has to be taken into consideration in estimating the true proportion of amoebic to bacillary dysentery in the Egyptian Expeditionary Force. He thinks that a percentage of 7 per cent. would indicate the proportion of amoebic to the total number of dysentery cases.

[The reviewer wishes to emphasize that the two papers of his referred to by Woodcock in this correspondence were written at an interval of two years, though published almost at the same time in the *Jl. Roy. Army Med. Corps.* The first, published in April, 1919, was written in 1919, and referred to collected statistics, while the second, published in August, 1919, was written in 1917, and referred to statistics of one localized epidemic of dysentery.]

P. H. M-B.

AUSTIN (R. F. E.). **The Natural Cure and Prevention of Dysentery.**—*Indian Med. Gaz.* 1920. Nov. Vol. 55. No. 11. pp. 405–408.

This paper can hardly be considered a serious contribution to our knowledge of dysentery ; it merely summarizes the author's own

particular views upon dietetics and physical culture. The argument underlying his contentions is that unsuitable food—not the mere act of fasting—predisposes to dysentery. To settle this point the author experimented on himself on three different occasions in 1911 and 1912 without developing any disease. The first experiment lasted 16 days during which time he took nothing but water and half an ounce of Mag. Sulph. in a tumbler of hot water every morning on rising. Long walks were daily indulged in and the ordinary duties carried out. While fasting it is most necessary to take a daily aperient in order to clear waste products out of the intestinal canal. Whether a carrier of cysts or bacilli develops dysentery or not depends upon the man himself—so the argument runs. These germs should be really regarded as weeds which flourish in the soil made ready for them by man's indiscretions. All habits of life which keep the stomach, intestines and blood in a normal healthy state are really germicidal measures. Upon these principles the author bases his lecture on health and habits in the tropics : an exhortation to few and simple meals, the systematic consumption of fruit and indulgence in regular exercise.

P. H. M-B.

Schmidt (M. B.). **Ueber die Verkalkung der Nierenepithelien bei Sublimat-vergiftung und bei Dysenterie.**—[Calcification of the Renal Epithelium in Sublimate-Poisoning and in Dysentery.]—*Cent: f. Allgem. Path. u. Path. Anat.* 1920. Feb. 1. Vol. 30. No. 18. pp. 497–500.

Calcification of the epithelial lining of the convoluted renal tubules occurs in sublimate-poisoning ; in rabbits, for instance, it may supervene within 18 hours. Similar changes in the same situation were found in a fatal case of bacillary dysentery. Generally in man necrosis of the urinary epithelium is not accompanied by calcification, except when the concentration of calcium in blood and urine rises owing to destruction of the intestinal epithelium. Damage to the renal, combined with destruction of the intestinal epithelium, favours such calcification.

P. H. M-B.

Haughwout (Frank G.) & Domingo (Elias). **Protozoologic and Clinical Studies on the Treatment of Protozoal Dysentery with Benzyl Benzoate. II. Treatment of a Case of Acute Balantidiosis ; Recovery ; Death from Other Causes ; Failure to find the Parasites in the Bowel Lumen and Gut Wall at Autopsy. With a Preliminary Note on the Anatomical Findings at Autopsy** by De Leon (Walfrido) — *Philippine Jl. Sci.* 1920. June. Vol. 16. No. 6. pp. 633–64.

The present communication is a continuation of a study of dysentery treated with benzyl benzoate, already reviewed in this *Bulletin*, Vol. 15, p. 190. A single case of infection with *Balantidium coli* received much the same treatment, but the authors excuse themselves for drawing any general conclusions on the grounds that circumstances were particularly favourable for minute study in this instance, and that so far the treatment of this disease has been so unsatisfactory.

When the benzyl benzoate treatment commenced the patient was practically *in extremis*. The parasites themselves finally disappeared from the stools 16 days after commencement of treatment and 19 days before the death of the patient, who succumbed from a mental disease quite independent of dysentery. Benzyl benzoate was given in doses of ten drops of the 20 per cent. alcoholic solution in water three times a day; five days later the dose was increased to 15 drops. The stools rapidly improved and became formed. Death itself was due to endocarditis and abscess of the lung. The intestinal mucosa was congested, and no macroscopic ulceration in any portion of the intestine was noted. In sections made from widely separated areas of the intestine no balantidia were found.

Haughwout believes that *Balantidium coli* behaves in the tissues much as *Entamoeba histolytica* is known to do. During the quiescent periods (in the clinical sense) there is a migration, more or less constant, of the parasites back into the intestinal lumen. Encystment does not usually occur in the human subject, though if the faeces are hard and lacking in moisture the greater number of active parasites perish before reaching the exterior.

P. H. M-B.

Rosenblath. **Ein Fall von Balantidienerkrankung.** [Case of Balantidium Infection].—*Cent. f. Bakt.* 1. Abt. Orig. 1920. Dec. 2. Vol. 85. No. 4. pp. 257–261.

A short account of a case of Balantidium infection in a forester aged seventy, who had lived all his life in an isolated village near Cassel. He had never been intimately associated with pigs, though he had looked after these animals at various times during his career. The symptoms lasted three months before death, and consisted of uncontrollable diarrhoea, with great emaciation. The large intestine was hyperaemic, though not deeply ulcerated. The parasites were very evident in microscopic sections, in some places appearing as "nests" of 30–40 closely aggregated individuals. The patchy cellular necrosis of the mucosa did not extend beneath the muscularis mucosae. In one section parasites were distinctly recognized within the lumen of a small vein.

The paper ends with a resumé of recently reported cases of this disease.

P. H. M-B.

Brug (S. L.). **Het voorkomen van *Balantidium coli* in Nederlandsch-Indië.** [*Balantidium coli* Infection in the Dutch East Indies.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1919. Vol. 59. No. 6. pp. 894–900.

An account of a case of Balantidium infection in a native, which responded to salvarsan treatment after Simaruba, iodoform enemata and oil of chenopodium had failed completely. The author regards the pig as the chief source of Balantidium infection in the human subject, and maintains that infection from man is rare, his argument being that, whereas infection generally takes place by ingestion of cysts *per os*, the formation of cysts, common in the pig and the ape, is exceedingly rare, if it occurs at all, in man.

F. S. A.

i. Gandevia (Eric H.) & Wynne (T. C.). Appendicitis following Dysentery and Parotitis. (With remarks by Dr. Basil Kilvington).—*Med. Jl. Australia.* 1920. Dec. 25. p. 570.

ii. Dargein. Note sur l'action de la salicairine dans les diarrhées et les dysenteries.—*Arch. Méd. et Pharm. Nav.* 1920. Oct. Vol. 110. No. 4. pp. 298–303.

iii. Boinet (Ed.). in co-operation with Sicard (J.). De la dysenterie épidémique dans la Bible.—*Bull. Acad. Méd.* 1920. Oct. 26. Vol. 84. No. 33. pp. 166–169.

i. This paper records the clinical history of a patient with parotid abscess and dysenteriform motions. Operation revealed an appendix abscess. The patient subsequently died.

ii. This paper vaunts the effects of a preparation known as salicairine in the treatment of conditions known as dysenteriform diarrhoea, as well as in one case of chronic amoebiasis.

iii. These ingenious historians believe that the passage in I. Samuel, v. 9, referring to the punishment of the people of Ashdod with emerods refers to "haemorrhoids" and suggests that epidemic bacillary dysentery with prolapsus ani was already known to the Israelites.

P. H. M-B.

SPRUE.

RELE (V. G.). **Incidence of Sprue in Bombay, its Pathology and Treatment. A Paper read before the Bombay Medical Union on Jan. 16, 1920.**—37 pp. Bombay. 1920. Printed at the Bombay Vaibhav Press. [Price Two Rupees.]

The author has contrived to say a good deal about sprue in a reasonably short space. It is impossible to obtain exact statistics about the mortality in sprue in a city such as Bombay, where the monthly mortality from all causes is about 2,500. The disease, however, has assumed a position of considerable importance in this city, for which the climate and conditions of life are held to be responsible. Sprue is usually a disease of mature years, being common between the ages of 25 to 50, and is rarely seen in children. It is commoner in women than in men ; in fact, women in Bombay, according to the author's experience, have a higher ratio of mortality from intestinal diseases of all kinds than have men.

The endemicity of sprue in Bombay is not held to be due directly to climatic conditions, because in other towns of the Presidency similarly located the disease is by no means so common, nor can it be held to be due to the food, as other communities who live on exactly the same dietary, escape. Though sprue cannot be said to originate in unsanitary conditions, it finds a very congenial soil in places where drainage is neglected. The author is inclined to believe that sprue is nothing but a biological manifestation and final stage in the progress of dyspeptic trouble, and is the result of prolonged over-secretion by the stomach and duodenal glands.

The occurrence of one or more cases in the same family leads one to suppose that infection from one sprue case to another is possible. The symptoms of sprue group themselves into three stages :—

First stage, oral and dyspeptic troubles.

Second stage, intestinal symptoms.

Third stage, toxaemia, inanition, and anaemia.

Sprue may be grafted upon acute bacillary dysentery, or any other intestinal complaint, and in that case may prove fatal in a very short time.

The section on the pathology is purely speculative. It is thought that all the changes observed in sprue hinge upon the deficient production of secretin. Deficiency of this substance leads to a lowered activity of the pancreas, with consequent deficient digestion and mal-assimilation of food.

With reference to treatment, he is by no means confident that chromosantonin, as advocated by BEGG, justifies the claims made for it. In his practice he considers that in one case the drug was responsible for a smart intestinal haemorrhage, and in a second for acute jaundice with high fever. Emetine injections are stigmatized " as a waste of a good remedy for what it is not meant." A milk dietary in Bombay being unsatisfactory, recourse should be had to treatment with butter-milk. One teaspoonful of curds is added to 26 oz. of milk previously boiled and cooled. After curdling it is churned and water added. The fat must be removed from the curdled milk, and churning should not be considered complete until this has been effected. The resulting butter-milk is given in much the same manner as the milk treatment is usually arranged. The patient is told to take 38 oz. of milk a day for curdling, and the next morning is instructed to take his first cup at

7 a.m., and the remaining quantity he is to finish before 3 p.m. After that time he is to take the milk prepared from that set aside early in the morning of the same day, and so on. During the night-time nothing but water is drunk. The idea is that, if kept more than six hours on a hot day, the butter-milk may turn sour. The amount is gradually increased, so that he is taking 70 oz. on the fifth day; finally, the maximum quantity in the 24 days should be 140 ozs. (or seven pints). A pinch of table salt to a cupful of this milk greatly improves the taste. It is not possible to keep the patient on a regimen of this sort for more than two or three weeks, after which the addition of fruit is advisable. There are better fruits in Bombay than strawberries, which are very expensive. The following are recommended: pomegranates, sweet lemons (Santra), oranges, bananas, papaya, mangoes, apples, pine-apples, peaches, pumelo, and musk melon. Pomegranates are specially recommended, and next to these bananas—whether dubbed locally "plantain" or "banana" does not signify as long as they are ripe. Some patients do well on mango juice. Although most cases do well on the butter-milk diet, there is a group which is in no way benefited. They go on losing in weight, and the doctor is blamed for starving them; these are hopeless cases, beyond the range of any form of treatment.

The author does not consider a change of climate necessary as long as the patient carries out the treatment effectively at his place of residence. The seaside is better than the hill station for sprue convalescents in India. A good rule to observe is to send patients away from the endemic area to places where the mortality from diarrhoea and dysentery is lowest.

P. H. Manson-Bahr.

ELDERS (C.) **Over Indische Spruw.** [Notes on Sprue.]—*Nederl. Tijdschr. v. Geneesk.* 1919. Part 2. No. 21. pp. 1683–1690.

A paper read before the Dutch Association for the Study of Tropical Medicine. The author develops the view, put forward by him in a former brochure summarised in this *Bulletin*, Vol. 14, p. 121, that sprue is a deficiency disease, and suggests that deficiency in amino-acids, in which flesh is rich, is an important factor in addition to deficiency in A and B vitamines.

F. S. A.

BOYD (Mark F.). **Is Sprue Endemic in the South?**—*Southern Med. Jl.* 1920. Apr. Vol. 13. No. 4. pp. 229–232.

Boyd believes that the evidence advanced by ASHFORD, supporting the view that *Monilia psilosis* is the cause of sprue, is conclusive. Sprue symptoms have been observed in persons who have never been outside the United States, and from these persons ASHFORD'S Monilia has been recovered. The first of the cases cited was a baby of three and a half years of age; the second a married lady of 56. Though our knowledge of the means of transmission of sprue infection is nil, yet it would appear that measures designed to reduce contact and promote proper execreta disposal might be of value in its control.

P. H. M-B.

Wood (Edward J.). **Sprue in America.**—*Jl. Trop. Med. and Hyg.* 1920. Aug. 16. Vol. 23. No. 16. pp. 201–203.

Careful observation of cases of sprue seen in the Tropical Diseases Hospital, London, shows conclusively that there is no difference in the character of sprue cases from the West or from the East. It was surprising to see in the Eastern cases no more severe mouth symptoms ; a fact which justifies the suspicion that the tongue symptoms are over-emphasised in the literature, though, in a large proportion of cases they are quite secondary to the intestinal and blood symptoms.

No difficulty should be experienced in differentiating sprue from pellagra ; the question can be readily settled by estimation of the fat excretion. In sprue there is pancreatic inefficiency ; in pellagra there is none. The tongue differs markedly in sprue and pellagra ; in the latter the colour of the tongue is of a deeper hue than in sprue, and it is more or less flabby. In sprue Wood has never seen salivation.

The distribution of sprue in America is a matter of interest. In North Carolina it is by no means a rarity, as well as in Virginia and Georgia. One case has been reported from Boston.

P. H. M-B.

Sturtevant (M.). **Tropical Sprue in New York.**—*New Jersey Med. Soc. Jl.* Orange. 1920. Feb. Vol. 17. No. 2. p. 44. [Summarised in *Jl. Amer. Med. Assoc.* 1920. Mar. 13. pp. 764–765.]

A straightforward account of two typical cases of sprue who responded in a striking manner to milk diet ; one patient developed a craving for salt.

P. H. M-B.

Barach (A. L.) & Murray (H. A.). **Tetany in a Case of Sprue.**—*Jl. Amer. Med. Assoc.* 1920. Mar. 20. Vol. 74. No. 12. pp. 786–788.

This paper records tetany which developed in a case of sprue shortly before death, this being the second recorded case. Associated with this symptom a very considerable dilatation of the stomach was found at autopsy. The immediate cause of death appears to have been a ruptured gangrenous appendix, with consequent peritonitis. Analysis of the blood showed a diminished concentration of calcium, though injections of calcium lactate, 400 cc. of a 0·2 per cent. solution, in this case did not abolish the seizures of tetany.

P. H. M-B.

Conran (Philip). **Meat Diet in Sprue.**—*Brit. Med. Jl.* 1920. Aug. 7. pp. 206–207. With 1 chart.

A pure meat diet, almost the complete antithesis to a milk regime, is occasionally of value in the most advanced and chronic stages of sprue. Two cases illustrating the advantages of this method of treatment are cited in the paper under review. The first case contracted sprue in India. At the beginning of 1919 she weighed only 5 stone $8\frac{3}{4}$ lb., and presented signs and symptoms of an advanced stage of the disease ; there was considerable anaemia. Test meals showed that there was general delay of digestion and assimilation throughout the intestinal tract. Meat diet consisted of 1 lb. 9 oz. of minced beef daily, pressed

into cake and lightly cooked with 2 oz. of suet, and taken as five meals of 5 oz. each. After a few days the quantity was increased to 1 lb. 14 oz., given in five meals of 6 oz. each; hot water being sipped between each feed.

Subsequently this diet was considerably amplified by the addition of strawberries, egg-flip, bananas, rusks, etc., and in the nineteenth week the number of meals was reduced to four daily.

The dietetic treatment was supplemented by intestinal lavage, which proved of value in relieving the irritation of the lower bowel; in the later stages massage and the faradic current helped to restore the muscular tone of the abdominal wall.

During the first few weeks the weight dropped, and tetany of the hands and arms supervened. Medicinal treatment was for the most part symptomatic, chromosantonin grs. 5, twice daily, as recommended by BEGG, having little, if any, apparent effect. Improvement on meat diet was striking; the blood circulation first showed improvement; then the stools. In the last four weeks of the patient's stay at Duff House the average total day weight of faeces was 89 grammes, and over 4,000 calories of food were being taken.

On leaving the institution the patient had put on 2 stone $12\frac{3}{4}$ lb. and the bowels were opened naturally and regularly once a day on an approximately normal diet.

The second case, also a woman, contracted her illness originally in the West Indies, and gave a history of having suffered from two attacks of tetany in 1917. On admission her weight was 5 stone $12\frac{1}{2}$ lb., together with considerable anaemia and the more familiar symptoms. The absorption of fat and protein was found to be deficient. With the introduction of an exclusive meat diet definite improvement began; the attacks of tetany ceased, and the condition of the mouth became normal. She was discharged from Duff House after eleven months' residence, and after having gained 1 stone $8\frac{1}{4}$ lb. in weight since admission.

P. H. H-B.

CRAIK (Robert). **Meat Diet in Sprue.** [Correspondence.]—*Brit. Med. Jl.* 1920. Aug. 21. p. 293.

Craik points out after perusal of CONRAN'S paper on sprue that the yeast fungi which were said to be present in the gastric contents of the second case quoted by CONRAN were no "casual visitors," but actual settlers in the stomach. Eight years ago this correspondent published a note upon yeasts found in the stomach, and again in the *British Medical Journal* of July 24, 1920, a note on a second case in which the fungus proved to be the common thrush fungus. It is also pointed out that one would not expect to see Monilia or Saccharomyces in the faeces or stomach contents in a simple microscopic examination. It is as easy to miss yeast in such an examination as it is difficult to demonstrate them in a blastomycetic tumour from which they may readily be grown. It is easy to grow yeast from the faeces of the majority of people and thrush-like organisms are almost invariably present in the faeces in sprue. The organism to which ASHFORD has given the name *Monilia psilosis* is just as like the common thrush fungus—morphologically, culturally, and pathogenically—as it is possible for any fungus, admittedly subject to variation, to be.

Thrush is a trivial, but sprue is a terrible, complaint, and nothing should be left undone to clear up its pathology.

P. H. M-B.

GONZALEZ-MARTINEZ. **Les méthodes de laboratoire dans le diagnostic de la diarrhée chronique des pays chauds.**—*Bull. Soc. Path. Exot.* 1920. May 12. Vol. 13. No. 5. pp. 384–392.

The writer is very positive that the *Parasaccharomyces ashfordi* is the etiological agent of sprue, and that its claim, which he says is incontestable, to pathenogenicity has been well established by the work of the members of the Institute of Tropical Medicine of Porto Rico.

The grounds on which this statement is made are as follows :—

1. The invariable presence of this fungus in the lesions of the buccal and intestinal mucosa of *all those* suffering from the classical symptoms of sprue. He asserts that this fact was first demonstrated by ASHFORD in 1915 and subsequently by GUITERREZ, MICHEL, and himself.

2. The ease with which it can be isolated and cultivated on laboratory media, and the specific biological characteristics it possesses.

3. The reproduction of the symptoms of sprue in small neo-tropical monkeys, that is, diarrhoea, anaemia and emaciation, by introducing 10 c c. of a virulent bouillon culture of the organism twice daily into the food of these animals.

4. The presence of immune bodies in the blood of sprue patients which the writer claims to have demonstrated in 1915—an idea which was subsequently " brilliantly crowned with success " by the work of MICHEL.

5. The extraordinary success of vaccine therapy, using an autolysate of Parasaccharomyces as prepared by MICHEL.

He is therefore of the opinion that many microbiological proofs now exist—experimental, serological, and therapeutic—that *Parasaccharomyces ashfordi*, as the etiological agent of sprue, stands upon an incontestable basis.

In order to obtain the fungus the dorsum of the tongue is scraped by means of a curette, and the resulting material inoculated into Sabouraud's medium (4 per cent. glucose with an acidity of 2 per cent.). Other inoculations are made by plating in the usual manner on the same medium in petri dishes. At the end of 48 hours the typical colonies can be recognized and easily differentiated from other organisms. The yeast can then be recognized under the microscope and its biological characteristics studied. It produces neither acidity nor clot in milk and ferments glucose, maltose, laevulose, and saccharose, the reaction with maltose being especially characteristic and differentiating the organism from other species. No yeast cell under 3μ which is oval in shape or granular in appearance can be considered as belonging to the species *Parasaccharomyces ashfordi*. The organism is a round, refractile, nucleated yeast $4–7\mu$ in diameter and possessing a vacuole containing bacilliform motile bodies. Reproduction is by gemmation and by mycelium formation.

With regard to the complement-deviation reaction by the use of a polyvalent antigen made from three races of the organism, the claim is made that its diagnostic value is far greater than that of the Wassermann reaction in syphilis. The reaction is absolutely specific, if the ordinary precautions for standardising the various ingredients—complement, amboceptor, etc.—are observed. In the last series of 81 cases, 91·35 per cent. gave a positive result, as compared with those of syphilis, in which it is stated the Wassermann is positive in 64 per cent. The serum reaction is therefore of greater practical importance than the isolation of the organism—a procedure which involved a period of 12–15 days.

[No protocols or details of experiments are given in what appears to be a presentation of the author's views. Many of the statements, especially with reference to the complement-deviation reaction and therapy, require a much more extensive confirmation,

Little evidence has been adduced to guide subsequent workers in the differentiation of *Parasaccharomyces ashfordi* from similar yeasts which can be isolated from nearly every fermenting substance in the tropics. It is certain that no morphological distinctions can be made, for the description given most certainly applies to them all. It is perhaps premature to give a definite name to an organism whose claims as yet rest upon a rather slender foundation, nor is any mention made of any controls, so very necessary in work of this kind.]

P. H. M-B.

Heaton (Trevor). **The Etiology of Sprue.**— *Indian Jl. Med. Res.* 1920. Apr. Vol. 7. No. 4. pp. 810–839.

This is a well-considered compilation originally submitted as a thesis to Oxford University in 1919.

It contains few original observations on the disease, but the information is well arranged.

The following are the conclusions drawn :—

Sprue is a definite entity, and not a mere association of symptoms. Its predisposing and complicating factors lead to, or depend upon, a single pathological condition.

There is no positive evidence to suggest that this is a specific bacterial or protozoal infection. These organisms may be present, and their destruction may be necessary for the cure of the disease; but sprue symptoms may exist in their absence.

The symptoms of sprue are due mainly to two factors, namely, mycotic fermentation and digestive incompetence. The two most probable theories of the disease are accordingly that it is a mycosis, or that it is a physiological exhaustion-state due to climate. Whichever of these be the primary, they operate in a vicious circle. Defective digestion favours the multiplication of organisms, while an infective catarrh accentuates digestive weakness.

The peculiarities of the incidence and geographical distribution of sprue point to a physiological rather than an infective cause.

The immediate relief from all infective symptoms in response to non-specific treatment is contrasted with the very slow and uncertain recovery of the digestive function. This is also taken to indicate that the digestive failure is the essential disability, and the infection secondary.

The prominence of infective processes in the mouth in most sprue cases, and their tendency to relapse, cannot be explained by any theories of physiological failure of digestion. It is, however, less easily explicable by any infective hypothesis, for it is in origin physiological, depending essentially upon a condition of lowered resistance; the actual infecting organism being accidental.

The physiological disability of sprue is brought about by the effects of climate. In coeliac disease of children a similar disability is present, but it is congenital.

Hill diarrhoea is essentially a form of sprue, acute in onset and uncomplicated in course ; the disease affords an example of sprue symptoms arising in the absence of infective causes. The physiological fault underlying these three diseases may lie in the actual digestive glands themselves, the liver and pancreas. Possibly, however, it may be that the supply of the chemical ferment secretin is deficient, thereby depriving these glands of their normal stimulus.

P. H. M-B.

SCURVY.

Hess (Alfred F.). **Scurvy in the World War.**—*Internat. Jl. Public Health.* 1920. Vol. 1. No. 3. pp 302–307.

The author shows how prevalent scurvy was in the last great war, as it has been in previous wars, for famine and food deficiency follow closely. The greatest incidence of the disease, both in military and civil populations, was found in Russia and the Eastern Front, Serbia, Bulgaria and Roumania suffering severely. On the Western Front it was much less evident, cases rarely going beyond the pre-scurvy stage. The outbreak in Manchuria and at Kut are well known. The preventive measures taken by the British Government in forming a body of 256 men, known as "The Madras Gardening Corps," for the purpose of supplying locally fresh green vegetables, form a prophylactic precaution of great importance.

Cases were present in the armies of all nationalities, except the Americans, who were only in the field a comparatively short time. Frequently cases were not recognized, or were described as infective purpura, etc., but in the presence of shortage of food the various nutritional diseases due to the want of particular factors became very difficult to separate out, especially Barlow's disease or infantile scurvy, war oedema, and beriberi.

P. W. Bassett-Smith.

Richard (W. J.) & Mackinnon (W. D.). **Scurvy among Adults in Glasgow.**—*Glasgow Med. Jl.* 1920. Dec. Vol. 94. (New Series, Vol. 12.) pp. 336–343.

Contrary to the generally accepted view, the authors show that scurvy in adults is relatively common among the class which lives in common lodging-houses in Glasgow. Twenty cases were treated in the Govan Poorhouse Hospital in 1917, and about the same number in 1918.

These were men with an average age of 52. Most cases occurred in May, June and July, and the usual diet consisted mainly of tea, bread, margarine, sausage, ham, and tinned meats—the meat was generally fried and vegetables were rarely taken. None of the cases were admitted for scurvy; the symptoms were weakness, apathy, pains, stiffness and discolouration of the legs, superficial and deep haemorrhages, dry skin, spongy gums and often pyorrhoea.

The treatment was rest in bed, with ordinary hospital diet, abundance of green vegetables, lemon, malt, cod liver oil and tonics; recovery was generally rapid. Three cases are quoted *in extenso*, and a plea is made for a system of attaching Food Kitchens to the model lodging-houses.

P. W. B-S.

Giorgi (Ettore). **Morbo del Barlow epidemico, in raporto all approvvigionamento del latte in Venezia** [Epidemic Barlow's Disease in relation to Milk supplied in Venice].—*Pediatria.* 1921. Jan. 15. Vol. 29. No. 2. pp. 66–84. With 1 text-fig.

The author mentions cases of scurvy in infants of 15 months to three years old seen by him in hospital practice at Vienna during 1904 and 1908, which were definitely due to food deficiency. He discusses these cases with reference to Barlow's disease, and considers the two to

be pathologically identical. Both are forms of true scurvy, though the evidences in the gums is much less frequently seen in infants than in adults, and in infants the growing ends of the bones suffer most. In 1919–20 there was a real epidemic of this latent scurvy, or Barlow's disease, among the infants in Venice, which was dependent on the inferior quantity and character of the food that could be supplied to the greatly increased population returning to the town after the end of the war, and more particularly to the supply of a specially prepared form of condensed milk which had been deprived of all anti-scorbutic properties.

In Italy among the poorer class, with breast-fed infants, the disease is uncommon, but it is more in evidence in the middle-class, where artificial foods are commonly used. This "milk of Soresina," as shown in the graph, was supplied to Venice in very large quantities from April, 1918, to April, 1920, and was used by the greater part of the population. This was undoubtedly the chief cause of the epidemic ; it was not only insufficient in quantity for the returned population, but what there was available was deficient as a food for children. Ten cases are described in detail ; these had all been taking this form of milk, the exclusive use of which, together with other predisposing causes, favours the development of Barlow's disease. From his observations, the author concludes that the infants of the very poor suffer most from inanition, rickets and scurvy ; while in those of the better class the condition is more that generally recognized as Barlow's disease.

P. W. B-S.

Cozzolino (Olimpio). **La fase iniziale del morbo di Barlow (in pari tempo contributo all'identià tra scorbuto infantile e scorbuto nell'adulto)** [The Initial Phase in Barlow's Disease and the Identity of Infantile and Adult Scurvy]. — *Pediatria.* 1919. Aug. Vol. 27. No. 8. pp. 477–502. With 2 text-figs.

The author's main thesis is to the effect that the most valuable early sign of infantile scurvy is revealed by radioscopic examination, and consists of a thickening and darkening of the epiphysial line between the shaft of the femur and the lower epiphysis. He further contends, developing the argument in considerable detail, that infantile and adult scurvy are, in essence, identical, their differences corresponding merely to the differences between an infant and an adult.

F. S. Arnold.

Abels (Hans). **Ueber das Verhalten des skorbutischen Organismus gegen Infekte (skorbutische Dysergie)** [The Behaviour of the System in Scurvy towards Infection (Scorbutic Dysergy)]. — *Wien. Klin. Woch.* 1920. Oct. 7. Vol. 33. No. 41. pp. 899–901.

In a previous communication the author has pointed out that animals fed on vitamine deficient diet were very susceptible, or poor in resistance, to infections from without ; the results showing in various ways, haemorrhagic manifestations being the most common.

All these reactions, which are toxic infections, are included under what he calls scorbutic dysergy. He points out that in animals which, in his experience, are not inclined to spontaneous haemorrhages, even in the

last stages of "scorbutic avitaminosis," haemorrhagic phenomena are rapidly produced by introduction of infective organisms (*B. coli comm.* &c.).

Old guinea-pigs on deficiency diet died without haemorrhages, differing from what is found in young rapidly growing animals.

The haemorrhages mostly occurred in the animals that had received a comparatively large amount of infection and survived for several days; hardly any haemorrhage was found in those animals that died at once. In man, as well as in animals, he believes that it is the secondary toxic infection favoured by disordered changes in the body which brings about the chief symptoms of scurvy.

P. W. B-S.

Mouriquand (G.) & Michel (P.). **Parallélisme entre le degré de dessiccation et la perte du pouvoir antiscorbutique des végétaux frais.**—*C.R. Soc. Biol.* 1921. Jan. 8. Vol. 84. No. 1. pp. 41–42.

Clinical and experimental evidence indicate that a dietary containing the necessary food elements (calories, amino-acids, vitamine accessories A and B, and mineral salts), even if not treated chemically or sterilized, is incapable of providing for normal nutrition, unless it contains fresh vegetable substances, namely, those not deprived of their natural fluids, or that chemo-physiological texture which the presence of "eau vivante" implies. If this water of vegetation is removed even by moderate heat, it cannot be replaced by soaking the desiccated material afterwards, and all anti-scorbutic properties are lost.

P. W. B-S.

Holst (Axel) & Frölich (Theodor). **On the Preservation of the Anti-Scorbutic Properties of Cabbage by Drying.**—*Jl. Trop. Med. & Hyg.* 1920. Nov. 1. Vol. 23. No. 21. pp. 261–263.

In continuation of previous work for the prevention of scurvy, the authors carried out some interesting experiments, which they hope will be of value to the Mercantile Marine, of preserving cabbage and other vegetables in a dry form, though much further experiment will be required before these can be prepared on a large scale. The results are summarized as follows:—

(1). Thin slices of cabbage, which are dried for one week in an incubator at 37° C., and at the same temperature by means of phosphorus pentoxide, show very pronounced anti-scorbutic properties when kept at 37° C. for 18 to 26 months in vacuum bottles.

(2). The same cabbage loses almost all of these properties when not treated with phosphorus pentoxide, but kept for 18 months at 37° C in closed vessels with calcium chloride.

(3). If treated as under (2) the cabbage keeps its properties much better at +4° to +10° or 12° C.

(4). The results are better than mentioned under (2), but not so good as under (3), when the cabbage is kept at +4° in closed vessels without any drying remedies.

[Shorten and Roy have reported the preservation of the active properties in sun-dried vegetables.]

P. W. B-S.

Hess (Alfred F.), Unger (L. J.) & Supplee (G. C.). **The Relation of Fodder to the Anti-Scorbutic Potency and Salt Content of Milk.**—*Proc. Soc. Experim. Biol. & Med.* 1920. Vol. 18. No. 1. p. 39.

Five cows, which had been stall-fed during the winter, were kept for three weeks on food containing practically no anti-scorbutic substances. The milk rapidly diminished in quantity, and at the end of the time a specimen was dried by the Just-Hatmaker process. These same cows were then put out to pasture for three weeks, and again specimens of milk taken and dried. Feeding experiments with guinea-pigs were carried out with these two samples of dried milk. The first had no anti-scorbutic properties, whereas the pasture milk was rich in these factors. Tested for the amount of salts, the milk from the cows which were on the dried fodder contained considerably lower amounts of calcium, phosphorus and citric acid, but a higher percentage of sulphur than that of the milk when anti-scorbutic food was supplied.

P. W. B-S.

La Mer (Victor K.) & Campbell (H. L.). **Changes in Organ Weight produced by Diets Deficient in Anti-Scorbutic Vitamine.**—*Proc. Soc. Experim. Biol. & Med.* 1920. Vol. 18. No. 1. p. 32.

Young guinea-pigs kept on a diet free from anti-scurvy factors showed at death marked increase in the size of adrenals, proportional to the duration of the experiment (as has been shown by McCarrison and Bassett-Smith). Starvation controls did not show any increase in adrenal weight. Forty scorbutic and 15 control animals were used; these gave no indication that the liver was affected by the deficiency of the C vitamine, but the heart and kidneys were increased in size on the scorbutic diets [in what way it is not stated].

P. W. B-S.

Mouriquand (G.) & Michel (P.) **Accidents du type scorbutique chez des animaux à une alimentation normale, non carencée, soumis à l'action de l'extrait thyroïdien.**—*C. R. Soc. Biol.* 1921. Jan. 8. Vol. 84. No. 1. pp. 43–45.

The elusive substances which are indispensable for perfect metabolic action are variously described as catalysors, ferments, complements, etc. The authors here prefer the term "minimal substances" as being non-committal. What influences do these exert on the origin of deficiency diseases? It is well known that the development of beriberi and scurvy is more rapid in the young, and functionally more active, than in adults, the deficiency factors being the same in both cases. Recent research has shown that injections of thyroid extract increase these metabolic functions. For their experiments guinea-pigs were used on a basic deficiency diet. These animals died in about 50 days. If 0·05 gm. of thyroid extract was added, death occurred on the 15th–18th day with very marked scurvy signs. If animals were kept on a non-deficiency diet with a dose of 0·025 or 0·05 gm. of extract they died in from 13 to 31 days with scurvy lesions, the larger dose being most rapidly lethal. If the animals were given an augmented anti-scurvy ration and 0·05 gm. of the extract, death occurred, but without evidences of bone lesions. As it was possible that the large doses given might be toxic in themselves,

in a fresh series one milligram only was used. The animals lived from 70 to 80 days and showed only very slight scorbutic signs. These experiments show that in guinea-pigs, even with an efficient anti-scorbutic diet, scurvy-like lesions can be produced by the addition of thyroid extract, which increases tissue metabolism.

P. W. B-S.

Bezssonoff. **Sur l'action antiscorbutique de la pomme de terre crue, broyée et intacte.**—*C. R. Acad. Sci.* 1921. Jan. 3. Vol. 172. No. 1. pp. 92–94.

A large number of feeding experiments were carried out with guinea-pigs, which showed that for them (1) fresh, raw, peeled potatoes were equal in anti-scorbutic value to cabbage and dandelion; (2) an equal amount of pounded potatoes (5 gms. plus 10 cc. of the juice) was less effective, the animals dying on the 50–70th day showing scurvy lesions; (3) the extracted juice was less effective than equivalent quantities of the fresh potatoes; with 30 cc. and 40 cc. per day death occurred about the 28–30th day; (4) with 10 cc. of the juice rapidly extracted from freshly dug potatoes the animal died on the 46th day. The pounded potatoes free from juice contained no anti-scurvy vitamine.

P. W. B-S.

Bassett-Smith (P. W.). **Further Experiments for Preservation of Lemon-Juice.**—*Lancet.* 1920. Nov. 13. pp. 997–998. With one chart in text.

The author's previous paper was noticed in this *Bulletin*, Vol. 16, p. 402. As to the lemon-juice tablets there described, it is noted that in manufacture on the large scale the great compression available will render unnecessary the use of gum tragacanth, and this is of benefit, because the gum interferes with solubility. The further experiments concerned the keeping properties of the concentrated juice and the effects of heat upon its anti-scorbutic property. A basin of the evaporated juice was exposed to air for half an hour, then covered and kept in the dark at room temperature for three months; there was neither growth of mould nor evidence of fermentation. Test-tubes of the juice were heavily infected with moulds; no growth took place. For the animal experiments young guinea-pigs of about 300 grm. were used. In one series fresh filtered lemon-juice boiled for five minutes before concentration was used, together with a basal diet of ship biscuit, sterilized milk, lime-water, and bran and oats. Six out of seven animals treated with this lemon-juice were completely protected over a period of 90 days. One died, apparently of scurvy, on the 29th day. In a second series the juice was heated to 58°C. for 45 minutes before concentration. Two of the six animals showed signs of deficiency disease. Protection was less complete. Two animals fed on the basal diet only, died of scurvy on the 39th and 41st days.

Graphs of the growth of two guinea-pigs, one of which received the boiled juice and the other the long-heated juice, are given. The former outstripped the latter.

It is concluded that the concentrated lemon-juice will keep well in concentrated juice or tablet form, and that heating for three-quarters of an hour is less harmful than boiling for a brief period.

A. G. B.

WILTSHIRE (H. W.) **A Note on the Value of Germinating Beans in the Treatment of Scurvy and some Points on Prophylaxis.**—*Jl. Royal Army Med. Corps.* 1920. Dec. Vol, 35. No. 6. pp. 469–476.

In the severe outbreak of scurvy in the Serbian Army the author carried out in separate wards a concurrent test of the value of fresh lemon-juice and germinating beans in non-selected scurvy cases. Unfortunately the worst of the epidemic was over before suitable beans could be obtained, but still the results were sufficiently interesting to note. Four ounces of fresh expressed lemon juice were given to the patients in one ward (thirty cases in all), and to those in another ward a portion of germinating beans which had weighed four ounces in the dry state (27 cases). The results showed a definite difference in favour of those treated with beans, 70·4 per cent being cured within four weeks, as against 52·4 per cent with lemon-juice. Using the time taken for the gums to return to the normal, it would be 3·1 weeks for bean cases and 3·4 for lemon-juice cases. The author again emphasizes the importance of commencing anti-scorbutic remedies early, namely, during the pre-scurvy stage, and of avoiding destruction of the anti-scurvy vitamine by over-cooking the food; for the germinating beans 10 minutes boiling is sufficient to make them palatable. For Army purposes he states that the value of germinating pulses is undoubtedly very great, for they act both as a food and as an anti-scorbutic.

P. W. B-S.

PLIMMER (Robert Henry Aders). **Note on "Scurvy" in Pigs.**—*Biol Chem. Jl.* 1920. Oct. Vol. 14. No. 5. pp. 570–571.

The following symptoms of scurvy were noted in four pigs aged four months, which had been fed since birth exclusively on cooked food—stoppage of growth, tender and swollen joints, twitching of limbs, loss of appetite and lassitude. When the same food was given uncooked the symptoms all cleared up in 1 to 14 days, in three in five weeks, and growth recommenced. Similar symptoms are not uncommon in pigs reared in the country and fed on cooked food, and are referred to as rheumatism, rickets, or pig gout, and raw potatoes are recommended for cure. One of the animals when killed for market was examined; it showed evidence of an old fracture of one rib and thickening and haemorrhages in five other ribs.

P. W. B-S.

DENGUE & UNCLASSED FEVERS.

CRAIG (Charles F.). **The Etiology of Dengue Fever.**— *Jl. Amer. Med. Assoc.* 1920. Oct. 30. Vol. 75. No. 18. pp. 1171–1176.

The etiology of dengue is of very great interest. The author gives a clear description of work already carried out, and he makes suggestions for the investigation now required, believing that the disease is probably a spirochaetal infection similar to yellow fever. The first important work by GRAHAM showed that the disease was carried by a mosquito, *Culex fatigans*, though the parasite described as being present in the blood has since been disproved. BANCROFT showed that another mosquito, *Stegomyia fasciata*, could transmit the infection. ASHBURN and CRAIG, in the Philippines, proved that not only was the infective agent in the blood, but that it was a filter-passer, and the filtrate was infective; they also confirmed GRAHAM's observation that *Culex fatigans* could act as the vector. CLELAND, BRADLEY and MCDONALD, in Australia, confirmed the work of ASHBURN and CRAIG, but found that *Stegomyia fasciata* was the carrier, and that the virus was also present in the washed red blood cells. By a systematic use of dark ground illumination, and by culture media employed by NOGUCHI in demonstrating the *Leptospira icteroides* of yellow fever, positive results with dengue will probably be obtained.

P. W. Bassett-Smith.

DE LANGEN (C. D.). [In Dutch and English.] **Enkele opmerkingen bettreffende "Low Fever." A Few Observations about "Low Fever."**—*Meded. Burgerlijk. Geneesk. Dienst. in Nederl.-Indie.* 1920. Pt. 4. pp. 48–61.

The author states that after eliminating enteric and malaria there remain in the tropics a certain number of mild febrile conditions called "Low Fever." He brings forward the hypothesis that in the tropics there is often an excess of blood sugar, that the metabolism of this gives rise to an elevation of the temperature, both morning and evening. In most cases, with the rise of temperature, there is no excess of sugar to be found in the blood, but in some it may not all have been used up. This metabolic activity gives rise to no subjective symptom, but if the thermometer is continually used, then symptoms are noted, a more or less normal condition passing into a neurasthenic one. He also, on homoeopathic evidence, states that the continued use of quinine may cause a rise in temperature of a low fever type.

In children a chronic hyperthermia is common; in these both the above-mentioned causes are found, but most often the rise is due to slight digestive disorder. In children very slight causes, as is known all the world over, will give rise to transient elevations of temperature, but for continued fever in children he admits that often no cause can be demonstrated.

P. W. B-S.

BUTT (H. T. H.). **Trench Fever in Salonica and France. Observations on an Outbreak of Trench Fever in the Salonica Command.**— *Med. Jl. S. Africa.* 1919. Sept. Vol. 15. No. 2. pp. 33–50.

The author gives a very interesting account of trench fever as he found it in Macedonia, with a historical survey of work done by others. He recognises four types: (1) Short form, initial pyrexia and no relapses; (2) Long form, initial pyrexia with one or more relapses; (3) Continuous form, long low pyrexia with modified symptoms, simulating enteric and other diseases; (4) Septicaemic form, initial pyrexia of great severity, followed by one or more minor relapses and exhibiting grave symptoms. One hundred and seventy cases were observed, ten of which belonged to this type. Rigors and vomiting were not noticed, and there were no fatal cases. In a series of observations on the use of atropin as a diagnostic agent he found it of little or no value. He describes the disease as essentially an acute relapsing fibrositis caused by the bite of the *Pediculis vestimenti*, the minimum period of disability being seventeen days, and the maximum seventy-six days (not including time in hospital ships, &c.), the only important complication being D.A.H.

The statistics show that a body of troops which have once become infected with lice are liable to retain their infection over a very long period, but it is noted that trench fever entirely disappeared from the Salonica Command during the summer of 1917; the heat was excessive, and this may account for the disappearance of the lice at this time.

The great importance of the prevalence of itch in dissemination of the disease is emphasised, and in an appendix the author refers to the report of the War Office and American Trench Fever Committee regarding the transmission by the excreta of lice.

His remarks with regard to prevention in time of war are pertinent and interesting, though far from optimistic.

P. W. B-S.

LOUGHNAN (W. F. M.). **Seven-Day Fever in Aden.**— *Jl. Roy. Army Med. Corps.* 1921. Feb. Vol. 36. No. 2. pp. 137–141. With 2 charts.

This is a description of a short fever of dengue type found in the Aden district; it contains no new information.

P. W. B-S.

DIETETIC DEFICIENCY DISEASE.

British Medical Association. **Discussion on the Present Position of Vitamines in Clinical Medicine.** [Hopkins (F. Gowland), Barr (James) and others.]—*Brit. Med. Jl.* 1920. July 31. pp. 147–151. With 6 charts in text.

F. Gowland Hopkins, in the opening paper, put in a plea for acceptance of the fact that vitamines were not merely hypothetical but substances of proved existence. While it was true that to regard them as causal agents of disease was hypothetical, nevertheless to refer to the vitamine "stunt" was to be deprecated by scientific workers. It was stupid to doubt the applicability of animal nutritional experiments to man, as such phenomena are basal phenomena. An experiment was described to show how the absence of one small cog in the machinery may destroy the whole. Rats living under similar conditions are fed with food exactly similar, except for one point. In one series, butter heated for four hours at 120° C. without aeration was used; in a second series the same butter heated to the same temperature, but this time "aerated" was employed. In sixty days the first series of rats were all healthy and the second series were all dead. A warning concerning the application of such animal experiments to the complicated nutritional conditions such as are now present in Central Europe was given.

Scurvy was adduced as a type of disease in which the evidence for a deficiency causation is unequivocal. In beriberi, too, the evidence is almost as clear in spite of the metaphysical difficulty that the absence of something cannot cause a positive change, such as polyneuritis.

Reference was made to the condition known as xerophthalmia or keratomalacia. This has been noted in animals fed on diets deficient in the fat-soluble accessory. In the rat, after 40–50 days of such a diet, a corneal opacity appears suddenly, which may go on to panophthalmitis. Caught at an early stage, the condition can be cured completely by exhibiting a little fat-soluble accessory in the diet.

The lecturer admitted that rickets had an etiology not so clearly defined as other food deficiency diseases. The recent work of Hess and Unger was discussed.

Sir James Barr proceeded to show that in his own words he was *anathema maranatha* because he did not believe in vitamines. He pinned his faith to calcium salts. At great length Ringer's work on crystalloids was reviewed, and arguments were produced to show that the results of this work can explain the causation of rickets without "invoking any recondite influence of vitamines."

Harriette Chick viewed her studies of hunger and deficiency diseases in Austria in the light of her previous laboratory investigations. She was greatly impressed by the necessity of having a sufficient quantity of accessory food-factors in any diet. Thus, children given 50 grms. of raw apple juice daily began to show early symptoms of scurvy; 10 grms. of raw neutralised lemon juice, however, gave excellent

results as a prophylactic. Great stress was laid upon the necessity of seeing not only that the various accessory food-factors are present but also that they are present in sufficient amounts. In Vienna there were large numbers of scorbutic, rickety, and underfed children.

Elsie J. Dalyell was associated with Miss Chick in her work in Vienna. She described the more clinical aspects of their study. Infantile scurvy was very prevalent, and in doubtful cases the only method of diagnosis was to apply the therapeutic test of administering anti-scorbutic material in the diet. Rickets also was very common both in breast-fed and in artificially-fed children. The study of accessory food-factors was carried on in certain institutions, and the influence of these factors was clearly shown in a series of tables.

R. McCarrison began his remarks by mentioning that keratomalacia is common in the Madras Presidency amongst ill-fed Indians. He then proceeded to lay great stress upon the connection between food deficiencies and the endocrine organs. These views have already been discussed in this *Bulletin*.

A. F. Hess. Dried milk retains its anti-scorbutic powers, despite drying, heating, and ageing, so long as the medium is neutral or slightly alkaline. The beading of the ribs usually regarded as pathognomonic of rickets is also found in early scurvy, as evidenced by the fact that in these cases it yields to anti-scorbutic therapy and not to anti-rachitic. Condensed milk does not always produce rickets. It was suggested that there are differences in the various preparations. The fat-soluble vitamine does not play such an important part in the causation of rickets as does the anti-scorbutic vitamine in scurvy. Cod liver oil is regarded as " almost a specific " in rickets.

George F. Still. This speaker concerned himself chiefly with the subject of infantile scurvy. He pointed out how disconcerting it was to have an infant brought to one suffering from scurvy, and after having explained that the condition was due to a certain patent food on which the child had been fed, for the mother to exclaim that all her other children had been fed on the same food and remained healthy. This fairly frequent happening was discussed. Does the infant start life with a " capital " of vitamines upon which it can draw for a varying time without further additions ? Cases were quoted where it might be said that certain children require a larger supply of vitamines than others. Prophylactics used were not always equally rich in vitamines.

Leonard Williams poured scorn on the heads of those who were so unimaginative and ignorant as to argue that a deficiency cannot give rise to a disease. A long list of human ills due to the hyper-civilised methods of food preparation was mentioned, and the remedies discussed from a dietetic standpoint.

W. H. Wilcox was of the opinion that with certain reservations the results of dietetic experiments were applicable to man. He discussed scurvy and beriberi, especially with regard to their incidence among the troops serving in Mesopotamia. He is a firm believer in the diet deficiency theory of these diseases.

S. Monckton Copeman confined his remarks to the treatment of malignant disease by purposely withholding accessory food-factors from the diet. He mentioned the observations of Professor Hopkins, who found that experimental tumours in animals grew less rapidly on a deficient vitamine diet. The speaker is now carrying on experiments upon human subjects along these lines.

A. D. Bigland.

McCarrison (Robert). **Deficiency Disease : With Special Reference to Gastro-Intestinal Disorders. A British Medical Association Lecture delivered to the South Wales and Monmouthshire Branch.** —*Brit. Med. Jl.* 1920. June 19. pp. 822–826. With 10 figs.

For the most part this paper is a somewhat popular and condensed account of the author's important researches on food deficiency diseases as produced experimentally in animals. Towards the end of the lecture the bearing of the results upon certain diseases occurring in the human race is discussed.

Four gastro-intestinal diseases call for special reference in this connection, viz., mucous disease of children, coeliac disease, intestinal toxaemia and gastro-intestinal stasis. The author shows how these conditions are associated with a diet deficient in protein and vitamines and excessive in carbohydrates and contrasts the clinical picture with that produced experimentally in monkeys. In support of this contention a case is quoted of a man aged 60 years who had been for 20 years a confirmed invalid and a martyr to dyspepsia and constipation. After two and a half months on a regulated diet and the administration of vitamines the patient completely recovered.

A. D. B.

McCarrison (Robert). **The Pathogenesis of Deficiency Disease. No. X. The Effects of some Food Deficiences and Excesses on the Thyroid Gland.**—*Indian Jl. Med. Res.* 1920. Jan. Vol. 7. No. 3. pp. 633–647. With 2 charts and 5 plates.

"(1) Dietaries deficient in vitamines lead to a reduction in the size and weight of the thyroid gland.

"(2) Dietaries deficient in vitamines render the thyroid gland susceptible to the noxious action of intestinal bacteria, or of their products, with resultant atrophic and necrotic changes.

"(3) A scorbutic diet of crushed oats and autoclaved milk may cause in guinea pigs considerable enlargement of the thyroid gland. The enlargement is, in the main, the result of congestion and haemorrhagic infiltration of its tissues.

"(4) Dietaries containing adequate provision of vitamines, but excessively rich in proteins and fats, induce in the thyroid gland of pigeons in confinement marked degrees of hyperplasia, the extent of the hyperplasia being largely dependent on the duration of the organs' exposure to the goitrigenous influences induced by the excessive protein and fat content of the food.

"(5) The addition of onions to a dietary excessively rich in proteins and fats, while containing at the same time an abundance of vitamines, markedly retards the development of thyroid hyperplasia, and the tendency to acinar 'budding' in pigeons living in confinement. The beneficial influence of the onions is held to be due in part at least to their action in restraining the growth of putrefactive types of bacteria in the gastro-intestinal tract and in retarding the absorption of their products. It is suggested that *succus alii* might prove of benefit in restraining the thyroid hyperplasia of Graves' disease."

A. D. B.

McCarrison (Robert). **Dietetic Deficiency and Endocrine Activity, with Special Reference to Deficiency Oedemas.**—*Brit. Med. Jl.* 1920. Aug. 14. pp. 236–239.

The author gives his own summary :—

"(1) Dietetic deficiency has profound influence on endocrine activity.

"(2) All endocrine organs, with the exception of the adrenal glands

and the pituitary body, undergo greater or lesser degrees of atrophy and depreciation of functional capacity as a result of dietetic deficiencies.

" (3) The adrenal glands and, in males the pituitary body, enlarge in consequence of dietetic defects; the former greatly, the latter slightly.

" (4) The adrenal glands are, of all endocrine structures, the most susceptible to dietetic defects.

" (5) The character of the adrenal enlargement varies with the character of the dietetic deficiency.

" (6) The adrenalin content of the enlarged adrenals varies with the character of the dietetic defect; it is in excess of normal when the food is deficient in vitamines, in proteins, and disproportionally rich in starch; it is below normal when the diet is scorbutic, and also when concurrent infections are associated with dietetic defects.

" (7) Oedema is invariably associated with massive enlargement of the adrenal glands in pigeons fed on autoclaved rice. But massive enlargement of the adrenals is not invariably associated with oedema. This association bears some intimate relationship to the adrenalin content of the enlarged organs; when the content is high oedema occurs in 86 per cent. of cases, when the content is low oedema does not occur.

" (8) Fresh butter contains some substance which tends to protect against oedema. This substance was not present in a cocoa nut oil."

[This work is of extreme interest from the point of view of pellagra etiology. All clinicians who have observed carefully cases of that disease must have been struck by the great similarity between pellagra and Addison's disease. McCarrison here again points to a possible causal factor in pellagra, viz., the derangement of the adrenals and their secretion. The occurrence of oedema, too, is striking; many of the Turkish pellagrins in Egypt examined by the reviewer presented this condition in varying degrees. Possibly this also was due to perverted activity of certain endocrine organs.]

A. D. B

Nixon (J. A.). **Famine Dropsy as a Food-Deficiency Disease.**—*Bristol Med. Chirurg. Jl.* 1920. Sept. Vol. 37. No. 140. pp. 137–148.

A discussion is here presented upon the condition known by the names Famine Dropsy, Hunger Oedema, and War Oedema. These names cover a similar clinical entity, the features of which are oedema, bradycardia, polyuria, and asthenia. The affection is probably traceable to a diet deficient in protein and calories with perhaps an excessive intake of fluids. Physical exertion and exposure to cold are accelerating factors. The author states that this condition bears no relation to cardiac or renal disease and is distinct from beriberi, scurvy and pellagra.

Treatment consists of rest in bed, warmth and a diet rich in carbohydrates, due attention also being paid to the protein content of the food. Much benefit is derived from cod liver oil.

The paper contains also a history of the subject together with a Bibliography.

A. D. B.

Ramoino (Paolo). **Le Avitaminosi.**—*Policlinico.* Sez. Prat. 1920. Aug. 2. Vol. 27. No. 31. pp. 819–826.

This review deals with avitaminosis in a general way. Recent work in other countries is discussed and conclusions are put forward agreeing in the main with those of other observers. No new researches are

described. The author places pellagra among the diseases the etiology of which can be attributed to the absence of certain accessory food factors. The possibility of amino-acids playing a rôle in the causation is also mentioned.

A. D. B.

Novaro (Paolina). **Richerche calorimetriche comparative sul digiuno e sull' avitaminosi.** Comparative Calorimetric Research on Starvation and Avitaminosis].—*Pathologica.* 1920. May 1, June 1, July 1. Vol. 12. Nos. 275, 277, 279. pp. 87–100, 133–156, 183–202. With 24 text figs.

In this series of papers the author traces in great detail the results obtained from pure starvation and from vitamine starvation in birds. Attention is focussed upon the progress of loss in weight, loss in heat emission and also upon temperature alterations. All the above changes are then studied during the convalescence of the birds after the experiments.

A. D. B.

Padua (Regino). **Cystolithiasis among Filipinos in Association with Dietetic Deficiency.**—*Philippine Jl. Sci.* 1919. May. Vol. 14. No. 5. pp. 481–498. With 1 text fig.

The observations of Osborne and Mendel on rats indicate that there may be some connection between the formation of phosphatic urinary calculi and diet deficiencies. A good opportunity was found among the Filipinos of testing the validity of this connexion since the Filipino diet is very limited and insufficient, especially as regards vitamine content, and beriberi is common in the region. Ten cases of cystolithiasis were particularly studied of which nine not only gave a history of having suffered from beriberi but presented signs of the disease. Another forty-eight cases were investigated but as these were "surgical" no full details of nutritional disturbances were obtainable. The majority of these were, however, under-nourished and under-developed, while two were clinically cases of beriberi.

From a study of these cases the author concludes that "the inadequate dietetic conditions among Filipinos and concomitant nutritional disorders such as beriberi favour the formation of phosphatic stones, owing to the low daily protein intake and the lessened acidity of the urine resulting therefrom." Attention is drawn to the prevalence of uric acid and urate calculi in Europe and the United States of America and a comparison made with the significant findings in this research.

A. D. B.

Osborne (Thomas) & Mendel (Lafayette B.), with the co-operation of Wakeman (Alfred J.). **Milk as a Source of Water-Soluble Vitamine.** II.—*Jl. Biol. Chem.* 1920. Apr. Vol. 41. No. 4. pp. 515–523. With 4 charts.

In earlier nutritional experiments the authors showed that milk was necessary to give satisfactory growth in rats fed on "synthetic diets." Hopkins showed the same necessity, but in his cases a very much smaller quantity of milk was required. Experiments, therefore, were carried out to test these milk values. Attempting to duplicate

Hopkins' results, it was found that not until 16 cc. of fresh milk were given daily with the food was anything like a normal rate of growth obtained in the rats. The use of unpasteurised milk did not lessen the amount of milk necessary. Even the use of "summer milk," *i.e.*, milk from cows living all day in open pastures, did not improve matters. "The inferiority of even 15 c.c. of the fresh, unpasteurised summer milk as a source of water-soluble vitamine, in contrast with 0·2 grms. of dried brewery yeast, is indicated by the more rapid gains made by the animals thus tested when the yeast addendum replaced the milk." The anti-scorbutic value of cow's milk is less than that of many raw fruits and vegetables, and thus much more milk has to be given to produce increased intake of food and improved rate of growth. The importance of this work in connection with the artificial feeding of infants is noted.

A. D. B.

di Mattei (Pietro). **Il caffè e le vitamine.**—*Policlinico.* Sez. Prat. 1920. Sept. 13. Vol. 27. No. 37. pp. 1011–1013.

Infusion of coffee has an extraordinary curative effect on pigeons the victims of experimental polyneuritis.

It is stated that 8 cc. of a five per cent. solution of Moka will relieve an early case in a few hours. Also pigeons fed on a diet of polished rice, and at the same time treated with coffee infusion (12, 16, or 20 cc. daily), remain healthy and do not lose weight.

This state of affairs does not always continue indefinitely, and in some cases the birds suddenly develop polyneuritis in one and a half months.

Attempts were made to discover what constituent of the coffee was the cause of these effects, but the author is of the opinion that all the substances produced by the roasting of coffee beans may play a part. These substances are not vitamines, because the beans are heated to a temperature of 230–250°.

A. D. B.

Coward (Katharine Hope) & Drummond (Jack Cecil). **Researches on the Fat-Soluble Accessory Substance. IV. Nuts as a Source of Vitamin A.**—*Biochemical Jl.* 1920. Oct. Vol. 14. No. 5. pp. 665–667.

The conclusions arrived at in this paper are :—

"(1) The nuts examined, Brazil, Barcelona, pea, walnuts, almonds and butter nuts, although containing large percentages of fats, possess a relatively low food value as sources of vitamin A often associated with fats.

"(2) These results furnish additional evidence for the theory that vitamin A is formed in the green part of the living plant and is not stored to any appreciable extent as such in the seed and other resting tissues."

A. D. B.

Drummond (Jack Cecil). **The Nomenclature of the So-Called Accessory Food Factors. (Vitamins.)**—*Biochemical Jl.* 1920. Oct. Vol. 14. No. 5. p. 660.

This short note constitutes a plea for the naming of accessory food factors. The term "vitamin" should be written without its final "e," in accordance with the standard scheme of nomenclature adopted by the Chemical Society, which "permits a neutral substance of undefined composition to bear a name ending in '-in.'" Also it is suggested that the terms Fat-Soluble A, Water-Soluble B, &c., be simplified to Vitamin A, B, C, &c.

A. D. B.

Jansen (B. C. P.) & Mangkoewinoto (R. M. M.). [In Dutch and English.] **Het respiratorisch quotient van met geslepen rijst gevoedde vogels.—The Respiratory Quotient of Birds fed on Polished Rice.**—*Meded. Geneesk. Lab. Weltevreden.* 1920. 3rd Series A. Nos. 1, 2, 3. pp. 50–65. With 1 diagram.

This paper perhaps will serve its purpose for general readers if the authors' conclusions alone are given.

The respiratory quotient of 'paddy' birds that are fed entirely on polished rice falls off sometimes and even shows an exceptionally low value in a few instances. This fall, however, is not constant and, so far as we may judge by these tests, is not at all suitable as a criterion for the diagnosis of polyneuritis.

A. D. B.

Jansen (B. C. P.). [In Dutch and English.] **Over het vitamine-gehalte van extracten van rijstzemelen en over de methoden om dit te bepalen.—On the Vitamine-Amount of Extract of Rice-Bran and the Methods of Estimating it.**—*Meded. Geneesk. Lab. Weltevreden.* 1920. 3rd Series A. Nos. 1, 2 & 3. pp. 22–49. With 2 folding tables in text and postscript addendum.

The following conclusions may be drawn :—

In contradiction to what is usually maintained in the literature, anti-beriberi vitamines can be dissolved out quantitatively from rice-bran, by extracting this substance for two days with 0·3 per cent. hydrochloric acid, with 70 per cent. alcohol, or with alcoholized hydrochloric acid.

The amount of vitamines found in different kinds of rice-bran varies enormously ; the author thinks this may depend on the length of time which has elapsed between the cutting and the peeling of the rice.

The amount of vitamines present may be determined approximately by feeding cocks or doves on washed white rice mixed with the substance to be estimated. This method is extremely tedious. Though certain workers save time by employing the so-called " Recovery Experiment "—*i.e.*, finding how much of the vitamine-containing substance is required to cure birds affected with polyneuritis—the author considers that this method is " absolutely worthless."

Doves are more susceptible than cocks to a deficiency of anti-beriberi vitamines. A bird called the " Munia Maja " is still more susceptible, and therefore, to save time, may be used in these experiments.

A. D. B.

Eddy (Walter H.) & Stevenson (Helen C.).

i. **The Suitability of the " Bachman " Test for Water-Soluble B.**—*Proc. Soc. Experim. Biol. & Med.* 1919. Dec. 17. Vol. 17. No. 3. pp. 52–56.

ii. **Further Studies in the Measurement of Vitamine Content.**—*Ibid.* 1920. Vol. 17. No. 6. pp. 122–128. With 1 diagram.

iii. **Studies on the Vitamine Content.**—*Jl. Biol. Chem.* 1920. Aug. Vol. 43. No. 1. pp. 295–310.

i. The Bachman test consists in planting yeast cells in a culture medium contained in Durham's tubes, incubated at 28–32° C. to obtain gas formation. To these tubes vitamine B extracts are added, when gas formation either fails to take place at all or does so very slowly.

(The culture medium employed is Nageli's solution=distilled water 100 cc., dextrose 10 gms., ammonium nitrate 1 gm., calcium phosphate 0·05 gm., potassium acid phosphate 0·5 gm., magnesium sulphate 0·25 gm.)

For quantitative estimation of water-soluble B, the test needs further standardization. For detecting the presence of this vitamine, the test appears useful, and is much quicker and more sensitive than rat-feeding experiments.

ii. This paper is a further study of the authors' previous work with the Bachman test, which measures enzyme activity in terms of gas generated. The Williams test measures the effect of the vitamine in growth of yeast cells.

The authors employ a method combining the best points in the Bachman and Williams tests. Even this combined method, apparently, has its defects, and more work is being done upon the subject.

iii. Evidence is produced to show that the new test employed by the authors is specific for B vitamine, and that the presence of C vitamine makes no difference in the results.

Illustrations are given showing the application of the test.

A. D. B.

Myers (C. N.) & Voegtlin (Carl). **The Chemical Isolation of Vitamines.**—*Jl. Biol. Chem.* 1920. May. Vol. 42. No. 1. pp. 199–205.

It proved very difficult to isolate anti-neuritic vitamine from autolysed yeast filtrate. Olive oil and oleic acid were successful in this respect, showing that the vitamine in the crude state is fat-soluble as well as water-soluble.

From dried yeast the extraction was more easy, acid methyl alcohol being used for the purpose. The active material is then purified by Funk's silver method and the mercuric sulphate procedure, yielding a crystalline substance. The extract so obtained becomes inactive on drying, and can be purified by procedures mentioned in this paper.

A. D. B.

Emmett (A. D.) & Luros (G. O.). **Water-Soluble Vitamines. I. Are the Antineuritic and the Growth-promoting Water-Soluble B Vitamines the Same?**—*Jl. Biol. Chem.* 1920. Aug. Vol. 43. No. 1. pp. 265–286.

The authors summarise their work thus :—

"(1) The antineuritic vitamine (pigeons) in unmilled rice is stable to heat at 120° C. and 15 lbs. pressure for one hour. It is partially altered by heating in the air oven at 120° for two hours, and totally destroyed at 120° and 15 lbs. pressure in two and six hours. The vitamine in extracts is more easily altered by heat.

"(2) The water-soluble B vitamine (rats) in unmilled rice appears to be stable to heat at these same temperatures, that is, it is not distinctly or totally broken down. Whether this vitamine was slightly destroyed could not be definitely ascertained due to the lack of quantitative methods.

"(3) These findings suggest tentatively, at least, that the antineuritic (pigeons) and the water-soluble B (rats) vitamines are not the same and that it would be better to consider them as being different until there is further proof to the contrary."

A. D. B.

Emmett (A. D.) & Stockholm (Mabel). **Water-Soluble Vitamines' II. The Reaction of the Antineuritic and Water-Soluble B Vitamines to the Yeast Growth-promoting Stimulus.**—*Jl. Biol. Chem.* 1920. Aug. Vol. 43. No. 1. pp. 287–294.

"(1) The rate of growth of the yeast which we employ is strikingly accelerated by the addition to the synthetic media of very small amounts of preparations, which we have shown by biological tests to contain the antineuritis and the water-soluble B vitamines, provided certain toxic substances are absent.

"(2) The yeast growth-promoting factor does not appear to be the same as the antineuritic or anti-beriberi vitamine (pigeons).

"This yeast stimulus is also possibly different from the water-soluble B growth promoting vitamine (rats).

"(4) Whether pigeons or rats require this yeast growth-promoting factor for normal development has not, as yet, been definitely proved.

"(5) Since the amount of yeast growth stimulus, expressed in terms of yeast cell units per gram of substance, does not appear necessarily to vary directly (in terms of potency) with the antineuritic and water-soluble B vitamine, this yeast method should not be employed quantitatively with too much definiteness until further study is made."

A. D. B.

Bierry (H.), Portier (P.) & Randoin-Fandard (L.). **Sur le mécanisme des lésions et des troubles physiologiques présentés par les animaux atteints d'avitaminose.**—*C. R. Soc. Biol.* 1920. June 5. Vol. 83. No. 19. pp. 845–847.

Results of starving animals, agreeing entirely with McCarrison's work, are put forward. The authors distinguish three stages in avitaminosis, viz.: (1) No symptoms; the animal lives on its vitamine reserve. (2) Reaction due to hypertrophy of adrenal glands, with concomitant hypersecretion of adrenalin. (3) Failure of adrenals and their secretion associated with subnormal temperature and finally death.

[Some such stages as these occurred among Turkish prisoners of war observed by the reviewer in Egypt. The second stage apparently was represented by so-called "war oedema," and the third stage by pellagra.]

A. D. B.

MISCELLANEOUS.

Külz (L.). **Zur Biologie und Pathologie des Nachwuchses bei den Naturvölkern der deutschen Schutzgebiete.** [Biology and Pathology of the Children of the Aborigines in German Protectorates.]—*Beihefte z. Arch. f. Schiffs-u. Trop.-Hyg.* 1919. Aug. Vol. 23. Beiheft 3. 182 pp. With 3 maps, 4 charts, and 4 plates.

In this special number of the *Arch. f. Schiffs-u. Trop. Hyg.* Professor L. Külz deals with the biology and pathology of the progeny of the aborigines in the German Protectorates, in a very comprehensive and exhaustive manner. He divides his subject into three parts, each with several chapters.

Part I. General Biology.—The General Biology of the Progeny of the Aborigines in the Colonies.

Colonial Aborigines.—

Chapter 1. Care and Education of the Child.

Chapter 2. The Matrimonial and Economic Position of Women in Regard to Progeny.

Part II. Statistics of Progeny.—

Chapter 3. General Colonial Progeny Statistics.

Chapter 4. Special Progeny Statistics of the German African Colonies.

Chapter 5. Special Progeny Statistics of the German Colonies in the Pacific.

Part III. Pathology of the Progeny among Colonial Natives.—

Chapter 6. Diseases of Childhood and (Racial) Constitutional Diseases.

Chapter 7. Mechanism and Pathology of Developmental Changes among Colonial Aborigines.

The author insists strongly on the recognition of the fundamental differences that exist between native and civilised races, allowing however that there may be some overlapping, as he finds traces of the savage among the civilised and signs of civilisation among natives.

He then gives an interesting and detailed description of the habits and customs of natives in all the German Colonies, particularly in regard to sex and progeny. He alludes to their habits of infanticide, child-murder, and abortion, believing that they originally were actuated by a laudable desire to eliminate the unfit, but that this degenerated into an evil habit. Contact with Europeans had the effect of substituting, or rather extending, the habit of abortion with sinister effects on progeny.

Polygamy, for which he would substitute the word "polygyny," he looks on sympathetically for the present until natives have become more accustomed to the Christian standard of monogamy.

Oligogyny, in which a man has several wives in succession, he finds relatively harmless as regards progeny, although it does somewhat restrict the full reproductive powers of the female.

Polyandry, as occasionally met with in the Pacific, he denounces altogether. He finds infant mortality at birth and during the first year low, owing to the custom of long nursing, but after weaning disproportionately high, on account of filthy habits and environment, exposure, malnutrition, general absence of hygiene, epidemics, and diseases of all sorts.

In Part II. he deals with Colonial progeny statistics, (*a*) in general, (*b*) in Africa, and (*c*) in the Pacific specially. This is a critical investigation of methods hitherto employed, and of statistics compiled from all parts of the German possessions. He finds them all more or less

unreliable, being based on hearsay, estimates or careless census without method, a stated plan being essential for the guidance of subsequent investigators. A registration census being impossible, he employs what he calls numerous sample censuses in various circumscribed areas, adds the results, and makes his calculations from these. He then elaborates his own methods for his special subject, progeny, using his statistical Table III. to obtain the absolute maternity index. This is easy by the direct method if one can get the requisite number of births by all women who have passed the climacteric. As seen in Table I., one simply divides the total number of women who have passed the climacteric by the total number of their offspring. The difficulty arises in not being able to obtain the data respecting the women who have passed the climacteric. From Table III. he explains his indirect method thus :—From his statistics he finds that 100 women have on an average borne 184 children. He then calculates the mean age of all the women. This is done by grouping all women according to age into eight groups, with an interval of five years between each, from the ages of 15 to 45. All below 15 and above 45 are ignored as useless for progeny. From the total of the remaining six classes he calculates the average female age to be 27, and takes the average total reproductive term from 15 to 42, viz., 27 years. This gives an average productive capacity of 100 women at the age of 27 of 184 children. Taking for granted that the process is fairly evenly distributed over the entire child-bearing period, and that having at 27 used up 12 years there are still 15 to run, he finds by the following formula $\frac{12+15}{12} \times 184 = 414$ per cent., or 4·1 per woman, this being the maternal index which yields a very similar number to that obtained by the direct method in Table II., 4·4.

TABLE III.

Birth-rate and Death-rate in Childhood in German East Africa.

Description.	Numbers or Percentages.	Similar Values in Civilized Countries.
Total number of women (married) of all ages	46,080	
Sum total of barren married women.	9,282 = 20 % ..	In Germany about 20 per cent.
Average age of women examined.	27 years.	
Number of live births ..	84,628	
Ascertained number of abortions + stillbirths.	6,435	
Proportions of live to stillbirths + abortions.	100 : 7 + 6-8 ..	In Germany for stillbirths alone 100 : 3-4
Total number of deaths during first year.	19,338 = 23 % ..	In Saxony and Bavaria 20 years ago 28 per cent. ; now in Saxony, 23 per cent.
Total deaths in succeeding years of childhood.	15,372 = 18 % ..	
Resulting living progeny ..	49,918 = 59 % ..	
Number of live-born children to 100 married women.	184	
Number reared to 100 women married or unmarried.	107	In Germany 107.
Number reared to 100 married women.	108	

N.B.—The author uses this table to illustrate his method of calculating the Reproductive and Progeny Indices respectively. It is based on 98 sample censuses all over East Africa (German). J. C. G.

TABLE IV.

Sex Proportion of 17,260 *Children at Birth and in Relation to Child Mortality.*

Description.	Totals.	Girls.	Boys.	European Equivalents.
Number of ascertained births	17,260	8,561	8,709	
Sex proportion at birth ..	—	100	102	Germany 100 : 105
Deaths in first year ..	4,560=26 %	2,223	2,337	—
Relative mortality of sexes	—	100	105	Germany, about 100 : 112
Deaths in succeeding years of childhood.	2,932=17 %	1,384	1,548	
Sex proportion	—	100	112	—
Total deathrate	7,492=43 %	3,607 = 42%	3,885 = 45%	
Sex proportion	—	100	108	—
Living progeny	9,768=57 %	4,954	4,814	
Sex proportion	—	100	97	—

(This table illustrates the author's remarks that there is a preponderance of males at birth in East Africa, though less than in Europe, but the increased death rate of male children subsequently equalizes the sex proportion, and even inverts it during childhood and adolescence.—J. C. G.)

With regard to *sexual proportion* he alludes to the great preponderance of males among the South Sea Islanders, as indicating a degenerative process, and compares it with the similar preponderance of male stillbirths in Europe as supporting this theory, as though there were a degeneracy of the living foetus in the South Sea Islands similar to that of the degenerate stillborn children in Europe. The same disproportion of males to females was seen among the Maoris, the Tasmanians, and the remnants of the aborigines of Australia. He refers to DARWIN as quoting MARSHALL'S theory that the long-continued habit of girl-murder was the cause of the excess of males, and explains how this might occur.

Suppose three families. No. 1 has six daughters and no sons, No. 2 has six sons, No. 3 has three sons and three daughters.

Mother No. 1 kills four daughters and keeps two daughters.

Mother No. 2 keeps her six sons.

Mother No. 3 kills two daughters, keeping one, and keeps three sons. This leaves nine sons and three daughters to continue the race, and so gradually the male element gains the ascendency, more male-producing females being retained. The balance between birth and death-rate gives us the progeny-rate, and this he calculates by the same formula as the maternity-rate. If 100 women of an average age of 27 bear 107 children, then up to the climacteric they should have according to the same formula $\frac{12+15}{12} \times 107 = 241$ children, or 2·4 per mother, which is a favourable proportion for carrying on the race.

He next refers to the importance of statistics of the proportion of children to adults, and to the percentage of the general population. He illustrates how misleading a statistic giving only the number of adults may be when ignoring the sex proportion. By the following example—

taking Type I., a tribe with 100 males to 100 females ;

taking Type II., a tribe with 150 females to 50 males ;
taking Type III., a tribe with 50 females to 150 males, and taking the average progeny at two per mother,
Type I. will just hold its own,
Type II. will prosper abundantly,
Type III. will become extinct unless its females produce three children to every two in No. 1 Type ; whereas No. II. can survive with an average of 1·5.

Hence also a low maternity index does not necessarily imply retrogression (when accompanied by a preponderance of females).

All the world over there is what BERTILLON calls the masculinity of mankind, a preponderance of males at birth ; this gradually declines during adolescence, and is reversed in old age by the higher death-rates in males.

The Herero seem to be the only exception to this rule, the females largely predominating. If this preponderance is, as the author assumes, inherent, it is of interest to note that the effect of crossing Hottentot with European (Boer), in producing the tribe called Bastards, is to neutralize this tendency, just as among the Samoan half-breeds.

He also alludes to the *position* of women married, unmarried, and widows, monogamy and polygamy, and vitality of offspring in their bearing on progeny, and expresses the hope that in the future other questions may be elucidated, such as plural births, the effect of age on reproduction, statistics of birth-rate according to seasons, birth statistics of Christians compared with heathen of the same tribe the maternity index of mixed races, etc.

In Chapter 4 he deals with African and in 5 with the Pacific colonies. He gives progeny statistics in each case in tabular form, but finds little reliable information in any, having sometimes to estimate progeny by general appearances, and sometimes to form conclusions against carefully compiled quinquennial Government statistics, as in Samoa, which were vitiated by want of evidence of method.

He then discusses the effect of migration, of indentured labour in caravans, on estates, Government works, and on railways in its relation to progeny, and finds that its influence is generally adverse. In the case of labour on estates the experiment was tried of allowing women to accompany men, but this only led to promiscuous intercourse among the coolies and had to be abandoned. Then labour colonies were established on the estates, with only partial success.

The general result of his investigations was that, with the exception of the natives of Yap in the Pacific and some small tribes in Africa, the outlook was hopeful, especially with the advent of improved hygiene and more careful statistics in obtaining information as to where help was most needed to stem degeneracy, and assure stability and progress to those tribes that were flourishing.

Part III.—Diseases of Childhood and Constitutional Affections :—

Smallpox, chief of epidemic scourges, heads the list, ravaging whole districts, and only ceasing where all have either succumbed or become immune by surviving an attack, to recur as soon as a susceptible progeny is again exposed to infection.

Endemic Malaria, present in all the colonies except Samoa and the entire Micronesian Archipelago, where anophelines are absent, is second on his list. Hardly a child escapes once it has invaded a community. Immunity is not acquired, only latency, with the possibility of an outbreak at any time. A relative immunity must, however, be possible

by the survival of the fittest, and this can apparently be transmitted to descendants, as newcomers suffer more than natives in malaria-infected countries. One hundred per cent. is the usual malarial index for the low-lying West African littoral and New Guinea. Too much reliance must not, however, be placed on this test when the index is low in a given district, as the index only acts as a kind of barometer showing the percentage of infection at a given time—the balance not then indicated may become infected later. Naturally this state of chronic malarial infection, with its haemic changes and general debility, must react detrimentally on progeny. Illustrating this sinister effect, he refers to Ronald Ross's ingenious suggestion that the decline and fall of ancient civilisation may have been caused by the spread of malaria from Africa. Its malign influence is scarcely less potent than smallpox, though more subtle. He finds that, contrary to prevalent opinion, practically no negro child is really healthy; a careful examination will always find some flaw.

Hookworm (ankylostomiasis) is another common disease of childhood, infections of 43–100 per cent. not being uncommon in some districts, and acts most deleteriously on digestion, circulation, and the nervous system, producing dullness and apathy. Fortunately the majority are only carriers, but all must be treated, as these may at any time develop symptoms and may infect others. The ages between 6–10 he finds best suited for gauging the hookworm index. He supports Baermann's suggestion that the intensity of the infection in *Framboesia tropica* (yaws) in any country is indirectly proportionate to its length of incidence—a fact brought out by the ravages of one of its forms, Rhinopharyngitis mutilans, in the Pacific, where yaws is a more recent importation, when compared with the comparatively harmless papillomatous form in Africa. In this connexion he depicts a case of Tibia procurvata, which he looks upon as a tertiary form.

Table XXIX.

Morbidity Sample Census among the Namala Tribe (New Guinea).

Disease.	Totals.	Children.	Women.	Men.	Remarks.
Total number examined	851	352	301	198	—
Tinea imbricata ..	136	29=8%	62=21%	45=23%	
Enlarged spleens (Malaria) ..	243	243=69%	—	—	—
Ulcers of legs	25	5=1·4%	8=2·6%	12=7%	—
Deformities of feet ..	7	—	5=1·7%	2=1%	—
Secondary yaws ..	45	44=13%	1	—	—
Leprosy	2	—	2=0·7%	—	—
Elephantiasis	8	—	5=1·7%	3=1·5%	—

[This table is designed to show some of the most prevalent diseases in New Guinea. *N.B.*—What strikes one as peculiar is the total absence of malaria among 499 adults examined in an obviously highly infected district. (J. C. G.)]

Tuberculosis, he points out, varies greatly in the Pacific and in Africa. The Pirquet reaction, as shown in one of the photos, is much more severe in the Pacific, often becoming distinctly pustular. Here he

finds we have to deal with a young or recent infection, proved by the intensity of its virulence. The Pirquet index is relatively low, particularly in the young. Its intensity of reaction is similar in the young and the adult, our distinctly juvenile tuberculosis, "scrofula," is found at all ages, and frequently shows a tendency to develop into the miliary form in adults and the aged. In Africa, on the other hand, he thinks that tuberculosis was first imported near the present Togoland by the colony founded by the great Elector of Brandenburg in the twelfth century, and was succeeded by a second invasion later on along the great trade routes from the north. Thus in Togo he found the attenuated form, in the jungle districts of Cameroon the virulent, showing a more recent importation in the latter. In recently infected districts, where it has not yet become endemic, it may still be possible to eradicate it by proper hygienic measures.

Of European diseases of childhood, scarlatina, measles, diphtheria, chickenpox and whooping-cough, no really authentic cases have been met with; but whooping-cough, measles and chickenpox have occurred in Africa and the Pacific in epidemic form, and, finding virgin soil, with disastrous results.

Tropical Ulcer also is more intense and virulent in the Pacific than in Africa; other ulcers caused by yaws, syphilis and external injuries are common; an occasional case of Madura foot may also be seen. A short notice of the baneful influence on progeny of gonorrhoea, which acts only quantitatively, and syphilis which acts quantitatively and qualitatively, by causing miscarriage and infected offspring, of soft chancre and venereal granuloma, a strong denunciation of alcohol and a brief reference to leprosy, brings the pathological survey to a close.

Finally he discusses the "Mechanism and Pathology," "the Methods and Pitfalls" of Europeanising Colonial aborigines, drawing a lurid picture of the first intermediaries, who did an infinite amount of harm by their method of colonizing with alcohol and rifle. In opposition to this method he urges the gradual influence of moral suasion and graded education, explaining to the natives the baneful influence of their belief in evil spirits, denouncing the use of abortifacients and aphrodisiacs, and other evil habits inimical to progeny, and by accustoming the men to regular work, relieving the women so that these may be able to devote themselves more to the care of the young.

He makes a special call on the medical profession to inspire confidence and introduce hygiene by precept and example, thus making the native more favourably disposed to innovation; and hopes in this way gradually to extend a beneficial European influence, advantageous to the natives themselves, as well as to the Mother Country.

The article is accompanied by four sketch charts and 31 most interesting and instructive statistical tables in the text, of every conceivable kind, from progeny to imported foodstuffs, well worthy of a careful study. It is quite impossible to do justice in this most cursory description, to this unique and important article. It is a most comprehensive and critical survey of all that has been published on the subject up to date, as well as furnishing a most interesting and instructive description of the life and habits of the natives in the former German colonies. It is of special interest to us now. Four excellent photographic plates, illustrating different forms of disease peculiar to natives in tropical climates, are appended.

J. Campbell Graham.

SHILLONG. **King Edward VII. Memorial Pasteur Institute. Third Annual Report for the Year ending December 31, 1919.** [KNOWLES (R.), Temp. Director.]—40 pp. 1920. Shillong. Printed at the Assam Secretariat Printing Office. [Price 12 *annas*; 1*s.* 6*d.*]

Pasteur Institute Section.—The total number of persons who underwent the full course of treatment was 1,406—72 Europeans and 1,334 Indians. There were 15 deaths, all Indians, from hydrophobia, or 1·07 per cent., the failure rate working out at 0·46 per cent. Extracts are given from the advice ledger, illustrating the problems which had to be solved in 108 cases. Of the European cases 36 were licked only; a lick percentage of 50 per cent., as against 1·05 per cent. among the Indians. Of the 15 fatal cases, the wounds of eight were deep on bare skin, cauterized; seven were deep on bare skin, not cauterized. As was stated in the last Report [this *Bulletin*, Vol. 15, p. 290], jackal bite is an important element in the Shillong cases, and this is explained by the patients being drawn from a rural population. Three hundred and fifty of the Indian patients, or 26 per cent., were bitten by jackals, and of the 15 fatal cases eight were jackal-bitten. The post-card system of after inquiries showed that 15 discharged patients subsequently died of hydrophobia; the state of health of 680, or 48·3 per cent., was thus ascertained. An account is given of each case of hydrophobia occurring in the Institute. Statistical information is furnished in 17 tables.

Bacteriological and Research Section.—The work on *kala azar* is of most importance, and will be dealt with under that heading.

Naga Sore.—Naga sore, Cachar boil, or North-East Frontier sore, was very prevalent in the monsoon of 1919; it "corresponds to CASTELLANI's description of *Ulcus tropicum*, and is characterised by terrible, sloughing, fetid ulcers of ankle, foot, or, occasionally, arm." "In 1919 Dr. Hall WRIGHT, of Mariani, experimentally proved that it may be passively transmitted by a small non-biting fly of the Siphonella species by feeding these flies on a case, and then transferring them to an abrasion on his own arm." Mango flies also are suspected. A group of 18 cases occurred in one tea-garden at the site of anti-cholera inoculations on the arm. The disease seems always to begin in a trivial abrasion accidentally sustained. A microscopic diagnosis may be readily made; in a film of the pus, stained with weak carbol-fuchsine, the field is seen to be full of fusiform bacilli usually semi-curved, long, and with pointed ends. In addition, there are a few cocci, and in many cases spirochaetes. Attempts to infect experimental animals failed. Cultivation at first failed, but later succeeded by the method of KRUMWIEDE and PRATT [*Jl. Infect. Dis.* 1913. Vols. 12 & 13, and SEMPLE, PRICE-JONES & DIGBY. *Jl. Roy. Army Med. Corps.* 1919. Vol. 33]; the fusiform bacillus is a strict anaerobe. If, however, pus from an ulcer be inoculated into a trivial abrasion on the arm of a susceptible person there appear in sequence, lymph containing scanty cocci, the fusiform bacillus which steadily multiplies, and, finally, spirochaetes in profuse numbers; the bacteriological picture is then that of Vincent's angina. Later the spirochaetes disappear, and the picture is that of Naga sore. Lines of treatment are very variable, but if the sores are simply kept wet with normal saline and all sloughs removed, they tend to glaze over and heal spontaneously. As a prophylactic measure, the wearing of puttees during the rains is recommended, and the use of Tinct. Iodii for trivial abrasions on the coolies.

Epidemic Conjunctivitis.—An epidemic of familial conjunctivitis in the monsoon was shown to be due to the Koch-Weekes cocco-bacillus of epidemic conjunctivitis in Europe, or else a modified strain of this organism.

Dysentery and Sprue.—Typical *E. histolytica* were found in patients from the jail, and dysentery bacilli of the Flexner-Y type in European residents. In the years 1917–1919 four cases of sprue were treated. In each an organism corresponding morphologically to Ashford's *Monilia psilosis* was isolated from the stools and tongue ulcers. One patient treated with an autogenous monilia vaccine made a brilliant recovery, and another responded equally well to an autogenous streptococcal vaccine.

Malaria.—The disease is endemic in the station. The arrival of antirabic patients who are also gametocyte carriers may account for the fact that in 1919 the Institute staff suffered repeatedly from malaria. It is proposed to put the dog-bite patients on quinine when malaria is suspected.

Diphtheria was not epidemic this season. An account is given of three cases of *phthisis* treated with sodium morrhuate.

Vaccine Section.—This was organized in July as an additional branch of the Institute work. Six kinds of vaccine were manufactured, chiefly " P.I.P. " mixed catarrhal vaccine for influenza and cholera vaccine. The approximate cost was Rs. 6,500, and the sale at two annas a cc. realized Rs. 22,481, so that the Section contributed materially to the support of the Institute. The P.I.P. vaccine contains pneumococcus, Pfeiffer's organism, streptococcus, *M. catarrhalis* and staphylococcus, and large quantities were used. Publication of a report thereon is deferred. It was chiefly used for injection of coolies arrived from Bihar and Orissa, where influenza was raging, and is believed to have been useful in reducing the mortality from secondary complications. It was also used in treatment with apparent good results.

A. G. B.

Bombay. **Reports of the Bombay Bacteriological Laboratory for the Years 1918 and 1919.** [Liston (W. Glen), Director.]—26 & 14 pp. 1919 & 1920. Bombay: Printed at the Government Central Press. [Price 3 *a.*, or 5*d.* each.]

Work of the Laboratory as Provincial Bacteriological Laboratory :—(1) A variety of stock vaccines were prepared, of which the great bulk was T.A.B. vaccine; 3,000 doses of leprosy vaccine were supplied. The research work concerned a variety of subjects : The replacement of Witte's peptone by a product made in the Laboratory, the preparation of influenza vaccine, inoculation experiments with *B. influenzae* and agglutination tests, hydrocyanic acid gas fumigation, for which a glass cabinet of 200 cubic feet was constructed, a development of the loop dilution method for the isolation of micro-organisms [*see* this *Bulletin*, Vol. 15, p. 289] ; Teague's method of the use of glycerine as a preservative of pathogenic organisms in " carrier " faeces was practised and found to be fallacious. For the standardisation of vaccines by enumeration of the organisms, the colony-count method gave the best results. This Report is signed by Major Kunhardt, I.M.S., as Acting Director.

(2) The research work described mainly concerned influenza. Facts are stated which suggest that at Bombay one attack confers some immunity against a second. The medium for the growth of *B. influenzae* devised by Dr. SOPARKAR is described. It consists of ordinary nutrient agar mixed with a preparation of human blood.

An account is given of the work done in the Laboratory during the war. In June, 1916, the Director took over the whole of the bacteriological work connected with the war hospitals in Bombay. Shortly after, the portion of the building in which the Laboratory is housed, which had been prepared for the School of Research in Tropical Medicine, was brought into use as an Enteric Depot, the two already established in India, at Naini Tal and Wellington, being inaccessible as well as full. Four months later there were 300 patients. In the period from August, 1916, to February, 1919, more than 2,000 patients were treated and examined; 49 carriers were detected [*see* this *Bulletin*, Vol. 16, p. 445], of which 13 were definitely chronic.

A. G. B.

COONOOR. **The Pasteur Institute of Southern India, Coonoor. The Annual Report of the Director, together with the Thirteenth Annual of the Central Committee of the Association for the period ending February 29, 1920.** [CORNWALL (J. W.), Director.]—25 pp. 1920. Madras: Printed by the Superintendent, Government Press. [For official use only.]

This report consists chiefly of tables. The number of cases treated was 3,172, the rate of failure being 0·75 per cent. The number of patients increases year by year.

A. G. B.

AUSTRALIAN INSTITUTE OF TROPICAL MEDICINE, TOWNSVILLE, QUEENSLAND. **Yearly Report from January 1 to December 31, 1919.**—18 pp. 1920. [BREINL (A.), Director.] Printed & Published for the Government of the Commonwealth of Australia by Albert J. Mullett, Government Printer for the State of Victoria. [Price 9*d*.]

Only the Director and the Biochemist, Dr. W. J. YOUNG, were present throughout the year. The Bacteriologist resigned in June; most of his time had been taken up in the work of Quarantine Officer. An Entomologist entered on his duties in February. Field work was entirely neglected owing to the shortage of staff. An account is given of the findings of the Director and Dr. YOUNG in their paper on Tropical Australia and its Settlement [*see* this *Bulletin*, Vol. 15, p. 298], and the summary of a paper on the effect of exercise and humid heat upon pulse rate, blood pressure, body temperature, and blood concentration [*loc. cit.*, p. 284].

A statistical inquiry was made into the disease incidence in North Queensland, the death-rate, birth-rate, and infantile mortality. For this purpose the thirteen census districts into which Queensland is divided were utilized, seven being coastal districts and six inland districts [one of these is on the Gulf of Carpentaria, as is shown on the sketch map provided]. Statistics were obtained from the hospitals in each district and distributed in fourteen classes, mainly according to the systems affected. Class 1 again (general diseases) has eleven subdivisions. The

averages are based on ten years' hospital returns and calculated per 1,000. The results, as well as the case mortality, are set out in tables and curves, and in addition the death-rate for the same diseases outside the hospitals, the birth-rate and the infantile mortality. The admission-rate and total death-rates show a tendency to rise with decreasing latitude [the southern border of Queensland is about 29° S., and the northern extremity about 12° S.]. The birth-rates show a tendency to decrease as the latitude decreases. The returns are based on populations which varied, in 1916, between 5,300 and 178,000 (Brisbane). [The charts for the respective general diseases and diseases of the various systems all show the same tendency for the permillage to rise as the latitude decreases, so that one wonders if there may not be some simple explanation other than the apparent one.] Work on the same lines will be continued in the future.

The Arneth blood picture of seventy-eight children between the ages of six and fifteen, known to be infected with hookworm, was ascertained; the result, which is tabulated, is a count differing greatly from that of normal Queensland children, and nearly identical with that of New Guinea native children infected with malaria. The eosinophile percentage is slightly higher in the hookworm infected than in normal Queensland children, but "not sufficiently raised to utilize it as a means of diagnosis of hookworm disease as in other parts of the world."

Work on the transmission of the dog filaria, *F. immitis*, was interrupted by the cold weather. Some results of FIELDING'S observations on the bionomics of *Stegomyia fasciata* in Townsville are given. Of 309 patients treated in the Tropical Ward of the Townsville Hospital, 102 were cases of ankylostomiasis, 24 were malaria, 20 typhoid, 13 sprue, 10 febricula, 9 ulcerative granuloma.

Dr. W. J. YOUNG contributes a report from the Biochemical Laboratory. His work was concerned with the chemical and physical properties of the sweat, metabolism in the hot and cool weather, black pigment from the Australian black fellows, and the sugar in the blood, the last in consequence of DE LANGEN and SCHUT'S work in Java; this last was unfinished. The gastric secretion of nine cases of sprue was tested. "In every case the stomach contents contained only very small quantities of acid, in some they were almost neutral, and hydrocloric acid both free and combined was almost entirely absent, or present in abnormally small quantities."

Mr. G. HILL reports on his entomological work, and Dr. J. J. HARRIS on the bacteriological work between January and July.

A. G. B.

ROBERT. **L'Institut Pasteur de Bangkok.**—*Bull. Soc. Path. Exot.* 1920. Nov. 10. Vol. 13. No. 9. pp. 720–725.

The formation of a Pasteur Institute in Siam, which had been preceded by two other laboratories, was brought about by the death of one of the princes in 1911 from rabies. A public subscription was at once raised, and in 1913 the Institute was opened under the charge of the author. The premises are quite inadequate. In the war, the Institute was attached to the fine hospital of the Siamese Red Cross, and in 1919 the King decided to build a new Institute in memory of his mother. He gave the land and a contribution amounting to 1,400,000

francs, which was increased by other subscriptions. Notes are given on the anti-rabies treatment, which 970 persons have undergone since 1913, and the preparation of anti-variola-vaccine. The Institute has produced vaccines against cholera and plague, the results of which are said to be excellent. Other information of its activities is briefly given.

A. G. B.

BERNARD (Noël). **Situation actuelle et fonctionnement de l'Institut Pasteur de Saïgon.**—*Bull. Soc. Path. Exot.* 1920. Nov. 10. Vol. 13. No. 9. pp. 714–719.

An account is given of the history of the Pasteur Institute of Saigon. A laboratory came into existence in that town in 1891–93, the first microbiological laboratory in the Far East. In 1904 the laboratories at Saigon and Nhatrang were transformed into Pasteur Institutes, and in 1918 the Pasteur Institute of Paris gave the daughter Institute at Saigon financial and administrative autonomy, placing all the services under the immediate control of a Director. It derives its funds from an annual contribution from the Government of Indo-China and from the sale of its products. The Institute is now to be reconstructed at an estimated cost of 190,000 piastres (piastre formerly=about 2*s.*).

Henceforward it will have three divisions, of human microbiology, animal microbiology and chemistry respectively. Under the first heading come the laboratories for the study of rabies, for bacteriological diagnosis and epidemiology, for the preparation of vaccines and auto-vaccines and the cultivation of lactic bacilli, for the study of malaria, and for the study of various diseases. In the animal microbiological division anti-smallpox vaccine is prepared.

In the divers laboratories are about 20 Annamese laboratory assistants. The recruiting of both the French and native personnel is at present very difficult, partly owing to the high cost of living in the East. To enable them to last out the three years of training, it is proposed to build a rest-house at the sanatorium of Lang-Biang.

A. G. B.

NOC (F.). **Rapport sur le fonctionnement du Laboratoire de Bactériologie de l'A.O.F. en 1919.** (Gouvernement général de l'Afrique occidentale française.)—32 pp. 1920. Dakar: Imprimerie de la Mission Catholique.

The laboratory was in charge of Dr. A. LEGER for the first seven months, and of Dr. Noc for the remainder of the year. It comprises a division of human microbiology, to which are attached the anti-rabies and anti-plague services, and a division of water analysis and biochemistry. A division of veterinary microbiology is in process of organization.

Human Microbiological Division.—The Anophelines found at Dakar are *A. costalis*, 75–80 per cent., *A. funesta* and *A. pharoensis*. In the stomachs and Malpighian tubes of Stegomyia were frequently found spirochaetes at the limit of visibility, or visible only with the ultra-microscope; no case of yellow fever occurred during the year.

Xenopsylla cheopis is the common flea on the grey and black rats, which are of about equal occurrence. *Echidnophaga gallinaceus*, the

sand-flea, is very widespread ; it is found on fowls, dogs, cats, rats, and also on man ; its rôle in the transmission of disease has not yet been determined. Of 96 rats examined, two were found plague-infected. An epizootic of plague occurred among the laboratory guinea-pigs, the food of which was often shared by rats ; about 12 died. The plague epidemic, which is referred to later in the Report, came to an abrupt end in December, and about the same time the rats almost disappeared. This disappearance might have been due to the ground-nut harvest, to a sudden fall of temperature, or defensive instinct.

Human and Animal Parasitology.—In four instances Porocephalus larvae were found in guinea-pigs, in the mesentery and liver.

An account is given of the bacteriological analyses made, of the human spirochaetes at Dakar, and of the anti-rabic and anti-plague services.

A. G. B.

LE DANTEC. **L'École de Médecine indigène de Dakar.**—*Bull. Soc. Path Exot.* 1920. Oct. 13. Vol. 13. No. 8. pp. 623–638.

The foundation of the Native School of Medicine of French West Africa dates from a decree of January, 1918, and the author was commissioned to get it opened by November. On the date of this address it had been in being for about two years. Its objects are given as the improvement of the sanitary conditions of the country, the instruction of the native in the essentials of hygiene, his protection against preventable infectious diseases, and the increase of his power of work, with the consequent improvement in his economic position—objects which were to be attained by the organization on a large scale of medical relief, comprising dispensaries and maternity homes provided with a sufficient personnel of doctors and midwives, instructed and adapted to the country. This personnel was to be obtained from the élite of young Africa as best suited to guide their compatriots in the ways of European hygiene, and it was decided that instruction should be given to both sexes, on the ground that if the young men were civilized they would not marry girls having no culture.

The initial difficulties in the absence of building and equipment are described ; at the beginning of the third year the premises were quite inadequate. There are veterinary and pharmaceutical sections, as well as those for medical men and midwives ; the last two are here described. The students are recruited from the École Supérieure Faidherbe. Hitherto, they themselves have decided whether or not they should follow a medical career, but Le Dantec thinks that it should be left to the teachers to select those who are best fitted ; he notes that with no such selection the results by the end of the second year are good. The pupils wear a European uniform. The programme extends over four years.

The programme of study for the midwife pupils lasts three years, and here difficulties presented themselves owing to the state of marked inferiority of the West Coast woman, which prevents girls being sent to school ; the majority of pupils have come from Kayes and from Dahomey. Similarly they were up against strongly-rooted custom on the occasion of childbirth. A dispensary for pregnant women was started, and a large building with 20 beds was opened as a lying-in hospital.

This was soon successful; three or four deliveries a day are now not uncommon, and more accommodation is needed. Outside, the mortality at and immediately after birth reaches 70–80 per cent !

A description is given of the facilities for teaching. The author is very optimistic as to the prospects of the school.

A. G. B.

NIGERIA. **Annual Report, Medical Research Institute, 1918.** [CONNAL (A.), Director.]—*Annual Med. and San. Report of the Southern Provinces for Year ending December* 31, 1918. Appendix. pp. 71–97. 1920. Lagos: Government Printers.

This Report deals chiefly with chronic amoebic dysentery and leprosy.

Chronic Dysentery.—Notes are furnished of 30 cases, three of which suffered from acute amoebic dysentery when first seen. In these latter cases if emetine is administered in good time the prognosis was found to be highly favourable. As a rule, by the time the patient came for treatment cysts in the motions were numerous. In Group 1, which contains the notes of cases definitely cured, there are 15 cases; "definitely cured" means that there was an absence of cysts at several consecutive examinations (varying between three and seven, at irregular intervals), and that the patient expressed his belief that he was cured; some importance is attached to this, because in cases in which the patient was doubtful there was usually a reappearance of cysts. The hypodermic administration of emetine and the oral administration of Alcresta gave the best results, which the writer attributes to the one drug acting on the parasites in the tissues, and the other on the cysts in the faeces. Alcresta was well tolerated, whereas emetine bismuth iodide invariably caused nausea or vomiting.

The other groups of cases include those improved and those unaffected. It is noted that alcohol is best used sparingly, if at all, during emetine treatment.

Leprosy.—Six lepers, all old-standing, advanced cases, were treated intravenously with gynocardate of soda in three-grain doses weekly; the treatment lasted 15 months without a break. Improvement was noted in all, but not more than after the use of other forms of treatment. In other six cases, after some months, atoxyl was substituted; the improvements made were not more striking, except in one instance.

Blackwater Fever.—There are reports on 16 cases.

In 508 specimens of faeces from Europeans, cysts of *E. histolytica* were found in 159 instances, but the number of individuals furnishing the specimens is not stated.

A. G. B.

UGANDA PROTECTORATE. **Annual Report of the Bacteriological Department for the Year ended December 31, 1919.** [DUKE (H. Lyndhurst), Bacteriologist.]—8 pp. 1920. Entebbe: Printed by the Government Printer, Uganda.

The actual period covered by this Report was July to December, 1919, and much time was evidently occupied in the necessary organization. To guard the calf supply from epidemics, it is proposed to have a cattle-breeding establishment in one of the islands on the Victoria Nyanza. A number of natives who had been exposed over considerable

periods to the bites of *Glossina palpalis* were examined, with the following results :—

" Total examined, 416 ; of these the very great majority appeared to be in perfect health.

Number in whom trypanosomes were found	1
,, ,, ,, malarial parasites were found	112
,, ,, ,, filariae were found	128
Number showing double infection of malaria and filaria ..	33 "

All were examined for enlarged glands, and in each case two thick blood films were carefully searched. The trypanosomes were found in a native of Kavirondo, by gland puncture. The filaria was of the *perstans* type. Of 207 other natives examined trypanosomes were found in four ; they were of *gambiense* type. Infection was apparently contracted on the shores of Lake Kwania, Eastern Province.

Details of other examinations are given, and the latter part of the report is concerned with lymph manufacture. The author writes :—

" The country is full of opportunities both for protozoological and bacteriological research and such investigations cannot fail to produce valuable economic results. The present staff however is insufficient, and important questions such as the preparation of vaccine on a large scale from the local plague organism cannot be approached."

A. G. B.

South African Institute for Medical Research. **Annual Report for the Year ended December 31, 1919.** [Watkins-Pitchford (Wilfred), Director.]—55 pp. With 2 illustrations. Johannesburg : Published by the South African Institute for Medical Research, P.O. Box 1038.

This, the first Annual Report of the Institute, written by the Research Bacteriologist, Sir Spencer Lister, consists of an Introduction, in which the history of the Institute is given, and the Annual Report itself, with accounts of the Research Division, the Routine Division and tabular matter.

The Institute was established in 1912 by agreement between the Government of the Union of South Africa and the Witwatersrand Native Labour Association for the purpose of carrying out researches and investigations for the prevention and treatment of human diseases. It has to perform routine public-health, medico-legal, and diagnostic services for the Government. It is required to carry out such routine investigations as may be required for the mining industry, and to prepare vaccines for the prevention and treatment of certain diseases to which the native labourers are susceptible. The buildings were completed in August, 1914. The European staff numbers 40 persons. The most prominent line of research has been in respect of the prevention of pneumonia, and work has been, or is being, carried out in connexion with silicosis, tuberculosis, bilharziasis, and cerebro-spinal meningitis, as well as in the domain of pure bacteriology. The routine investigations have grown from 9,091 in 1914 to 17,868 in 1919. Of vaccines and sera the annual output is 1,000,000 doses.

By a recent financial arrangement the Union Government and the Labour Association contribute a sum not exceeding £5,000 each per annum solely for the maintenance of the Research Division, and the Routine Division is so conducted as to be self-supporting. Any surplus earned by the latter is transferred to the Research Division. The Research Fund has thus benefited to the extent of £6,000.

The mortality amongst native miners has declined almost continuously in the Transvaal from 1912, when Sir Almroth WRIGHT initiated the work on pneumonia which was afterwards continued at the Institute. Despite influenza, the rate of mortality for all diseases among these labourers for the year 1919 was just about half of what it was in 1911, and the lobar pneumonia mortality declined from 12·84 per mille in 1910 to 2·64 in 1919; these results being largely consequent upon the successful researches carried out at the Institute. The present high cost of apparatus seriously retards the development of the Research Division. Increase of the charges made by the Routine Division has been of set purpose avoided. Recently efforts have been made to raise an endowment fund, and up to the date of the report £13,000 had been raised from private donors.

Of the activities of the Research Division, bilharzial disease is of most interest to readers of this *Bulletin*. Following on the work of MIYAIRI and SUZUKI, it was necessary to ascertain what species of water-snail acted naturally as the transmitter of *S. haematobium* and *S. mansoni* in South Africa, and to study the life-history of any parasites of molluscs which might be confused with the human schistosomes. Infective stages of *S. haematobium* were found in the very common mollusc *Physopsis africana*, 1,750 in one instance, and very occasionally in *Limnaea natalensis*, and it was shown that the former can also act as carrier of *S. mansoni*, but it is perhaps not the common host. Experimental work has also shown that *L. natalensis* is the intermediate host of *Fasciola gigantica*, which produces "liver rot" in oxen and sheep.

A. G. B.

JAMAICA. **Six-Monthly Report on the Work Carried Out in the Government Bacteriological Laboratory, April-September, 1919.** [SCOTT (Harold H.), Government Bacteriologist.]—59 pp. With 49 charts in text. (MS. Report dated October 6, 1919.)

This is a Report submitted for the information of the Tropical Diseases Research Fund. Dr. Harold Scott deals first with his difficulties in carrying on research. Briefly, though his qualified assistant resigned in 1917, he was not allowed a successor, and he was unable to retain a second assistant for any time owing to the inadequate pay allowed, so that much time was spent in training laboratory boys. Further, though 12,000 specimens had to be examined, only £60 per annum was allowed for the upkeep of the laboratory.

The relation of malarial fever and enteric is again discussed [*see* this *Bulletin*, Vol. 15, p. 252], and four more cases with the double infection are related. Each case was singularly mild, though both malaria and enteric in Jamaica are severe infections. In two instances *B. typhosus* was isolated from the faeces, and none had received inoculation. Not only is the double infection remarkably mild, but recovery is unusually rapid and complete.

The condition as to helminth infections appears to be improving, owing directly and indirectly to the zealous campaign against hookworm by officers of the Rockefeller Foundation. Tables show that helminth infections generally have been reduced by 4·42 per cent., and ankylostome infection, either alone or in combination, by 5.59 per cent. The bulk of the Report is occupied by a study of intestinal protozoa in Jamaica, with special reference to the entamoebae, which is summarized elsewhere in this *Bulletin*.

In conclusion, Dr. Scott suggests that "the Tropical Diseases Research Fund Committee might issue a circular giving a list of investigations which they would like made, so that men in different colonies might have some indications as to work of a profitable and useful nature to be undertaken as opportunities occurred."

A. G. B.

ROCKEFELLER FOUNDATION. **Annual Report, 1919.**—pp. xi.+449. With 81 charts, maps and illustrations. New York: 61, Broadway.

This volume consists of a review of the work of the Rockefeller Foundation by the President (Mr. George VINCENT), and reports by the Secretary, Treasurer, the General Director of the International Health Board (Mr. Wickliffe ROSE), and the General Director of the China Medical Board. The President writes:—

"During the year 1919 the Rockefeller Foundation participated in activities of public health and medical education in thirty-nine different governmental areas. Yellow fever control was successfully extended in Ecuador, Nicaragua, Honduras and Salvador. Public health progress through co-operative campaigns for the cure and prevention of hookworm disease was made in thirteen southern states of the American Union, in six of the states of Brazil, in five islands of the West Indies, in five countries of Central America, and in Ceylon, the Seychelles Islands, China, Queensland and Siam. Demonstrations in the control of malaria were continued in Arkansas and Mississippi, and arrangements were made for extending the program to eight other southern states." The other activities did not concern the tropics.

The story is told of the discoveries which led to the control of yellow fever, of the important work of NOGUCHI, and the recent campaign in Guayaquil. "The governments of Nicaragua, Salvador, Guatemala, and Honduras have agreed to control Stegomyia mosquito breeding in all ports, to require daily inspection of ships which touch at Pacific points, to discover whether there are Stegomyia breeding-places on board, and to maintain a six-day quarantine against all travelers from Southern Mexico until yellow fever has been eliminated from that country."

As to malaria, demonstrations of control were continued in Mississippi and Arkansas. "Continued supervision of control projects which have been in progress for four years in six Arkansas towns affords convincing proof that it costs a community approximately a fourfold greater sum to harbor malaria than to banish it. As a consequence of these demonstrations, public funds for malaria control operations are now being appropriated faster than sanitarians can be found to do the work." It was proposed to carry out a concerted campaign against malaria in the Southern States.

The Director of the International Health Board gives in 20 numbered paragraphs the main features of the work of the Board in 1919. He notes that the evolution of simple hookworm posts into effective agencies for conserving public health has been one of the gratifying developments in the Southern States. This report is an elaboration of that of the President. Under the heading, "Failure of Previous [Hookworm] Campaigns," we read that the high reinfection ratio in Ceylon brought out sharply the fact that unless soil pollution is stopped, treatment for hookworm disease brings only temporary relief. Porto Rico also affords a striking example of the hopelessness of treatment campaigns unless they are accompanied by good sanitation. Though

more than $347,000 has been spent in the hookworm relief measures which have been in progress in that island since 1902, a recent infection survey showed the infection to be as high as when the original programme was begun. More than 80 per cent. of the rural population remain infected. At more than three-fourths of the rural homes there are no latrines. An impressing chart shows the relationship in Trinidad between the absence of sanitary latrines and the rates of hookworm-reinfection. The rule now is pre-campaign sanitation.

The appendix, which contains 140 pages, treats in detail of hookworm infectivity, its extent and severity, its effects, its diagnosis, methods of treatment, infection surveys, and control operations. Other topics are malaria control and yellow fever control.

A. G. B.

MEDICAL JOURNAL OF AUSTRALIA. 1920. Sept. 18. No. 12. pp. 291–299. **Australasian Medical Congress, Brisbane. Plenary Session. Aug. 27, 1920. Discussion on Tropical Australia.**

This is an account of the proceedings of a plenary session of the Australasian Medical Congress held at Brisbane, August, 1920, to receive the report of a Sub-Committee on the question of the possibility of the permanent occupation of tropical Australia by a healthy indigenous white race.

Report of Sub-Committee.—A collective investigation was begun in 1914, was suspended by the war, and recommenced in 1920, information having been sought by means of a published *questionnaire*. The replies from tropical Australia constituted only ten per cent. of the forms forwarded. They "showed a markedly favourable opinion on the suitability, climatic and topographical, of North Queensland for successful implantation of a working white race."

Tropical diseases are absent with the exception of filariasis, malaria and sprue, which are rare. The constructive suggestions were :—

1. Regulation or prohibition of the sale of alcohol.
2. Better conditions of housing and clothing.
3. Better dietary.
4. Hygienic education of the people.

The Sub-Committee analysed the returns of medical examinations for Citizen Forces, Senior Cadets and Junior Cadets under the national scheme of compulsory military training, and diagrams are referred to [they are not published here] showing the percentages rejected for tropical Queensland, extra-tropical Queensland, and all other Australian Military Districts respectively. The results are discussed in some detail, the upshot being that tropical Queensland was not behind the other districts, and in some years of the war the rejections for tropical Australia were less numerous than elsewhere.

It analysed also the records of enlistment in the No. 1 Military District for the Australian Imperial Force during 1915–18, covering 46,580 men. The proportion of unfit in the tropical recruiting centres was consistently below that for Brisbane and Ipswich [25·5°], though above that for other districts. Information with respect to birthplaces is wanting, but "the gross figures would appear to present a cross-section of the physical efficiency of the effective manhood of tropical and non-tropical Queensland through all social grades."

With regard to actuarial investigations, as a result of examination of nearly 5,000 policies issued to adults during the ten years from 1910–1919, inclusive, from the Cairns and Townsville offices of the Australian

Mutual Provident Society, the Chief Actuary concluded that the rates of mortality were surprisingly low, and that the actual deaths were 68, whereas the number expected lay between 81 and 88; there was no extra risk in North Queensland.

The recorded results of the examination of schools, conducted in Queensland for nine years, were studied. The conclusion reached was that there is practically no difference between the proportion of notifiable defects amongst children in North and South Queensland, and the difference in individual defects is equally negligible. The Ophthalmic Inspector notes the very small proportion of cases of defective vision amongst Queensland school children as compared with England and Victoria. Tubercular disease was a rarity. The tendency to pallor among North Queensland children is, as was shown by BREINL and PRIESTLEY, only skin-deep. It is stated that ankylostomiasis among Queensland school children is now, thanks to the work of the Australian Hookworm Campaign, largely a thing of the past.

In their conclusions the Sub-Committee state that they are unable to find anything pointing to the existence of inherent or insuperable obstacles in the way of the permanent occupation of tropical Australia by a healthy indigenous white race. Such settlement is wholly a matter of applied public health in the modern sense. But they realize that a large amount of work still requires to be done in working out the practical details of any scheme of settlement, the existing conditions of sanitary administration and practice being described as "loose."

Several speakers took part in the discussion, which ranged over a rather wide field. Dr. CUMPSTON called attention to the need for better sanitary conditions and more expenditure to control infective diseases. In the Brisbane Hospital there was 15 per cent. of filarial infection. The Queensland Government spent as much on one State Hotel as on its health administration in the whole State. He considered that they were in a position to bury the superstition that the Australian could not develop his tropical country.

Dr. BREINL gave an account of his observations and enquiries as Director of the Townsville Institute [*see* this *Bulletin*, Vol. 15, p. 298].

Professor OSBORNE'S remarks are covered by the summary of his paper [*see* below]. From the physiological standpoint, he considered the case against the tropics had not been proved.

Dr. T. A. NISBET, of Townsville, spoke from 31 years' experience. The population of North Queensland was migratory; the death-rate was low because it was the desire of the inhabitants to get away "during the autumn of their lives." This kept down the death-rate. The young married women were greatly overdone with domestic duties under conditions of great heat and humidity. The heat led to debility and neurasthenia. [The Report of the Sub-Committee deals chiefly with the male population.] With an increase of population he anticipated an increase of parasitic diseases. He thought that the evil results of the northern climate would not be obvious till they had a settled population.

Dr. Richard ARTHUR complained that no evidence had been taken outside Australia. The Sub-Committee had not armed itself with facts from history, but based their definite and dogmatic conclusions on a limited experience of a few years.

Dr. T. G. ROSS, of Townsville, referring to the health of the women, said that no effort had been made to make the mountain land back from the coast accessible to those residing in the coastal district.

Sir James BARRETT said that the difficulty in North Queensland was neither climatic nor physiological, but economical. No one liked a hot climate, and adequate wages could be earned at Melbourne or Sydney.

Dr. PRIESTLEY did not think there was sufficient scientific evidence to justify the passing of resolutions.

The Sub-Committee's Report was adopted by a large majority.

A. G. B.

OSBORNE (W. A.). **The Physiological Factors in the Development of an Australian Race.**—*Med. Jl. Australia.* 1920. Sept. 18. No. 12. pp. 261–267.

This was a popular lecture given by the Professor of Physiology, University of Melbourne, at the Australian Medical Congress in August, 1920; it contains much that is of interest.

The juxtaposition of Australian and British troops in Egypt, France and Britain drove into the minds of onlookers the fact that there were physical differences, that an Australian race is in process of formation, and this is apt to be ascribed to climate. But, the author writes, "it is impossible to point to any experience of climatic action uncomplicated by other and very potent factors." Such are race, food, disease, form of government, economical conditions. These factors are discussed in the case of Australia.

Under race is noted the great advantage, possessed by Australia, of political unity. As to food, "in man's history food may be claimed to have been of immensely greater importance than climate." Extracts are given of the Lenten fare of a Northumberland household in the 16th century, to show what mighty feeders the English were. [This was an aristocratic family. What of the labourer?] The England of the 20th century is underfed. "The Australian," Professor Osborne writes, "is the greatest meat-eater in the world. . . . Pure, varied and abundant, Australian food must be given a big share of the credit for the physique of the Australian and for some part of his initiative and courage." As to the future, cereals will increase and beef animals decrease, but there are immense possibilities in pig-raising and the fisheries are almost untouched. For diseases, with the exception of hookworm and dengue, Australia enjoys a singular immunity from the worst tropical diseases, and it has the advantages of the absence of a large native population and of slums, except in a few large cities. A tribute is paid to the quarantine department, which has kept out plague and other infections.

Lastly, he comes to climate and the effect of tropical conditions on the white man. He pictures a highly developed civilisation in Central America, and the question being raised whether North America is habitable by men. A Royal Commission investigates and reports that this region is either uninhabitable or, if habitable, would be peopled by degenerates. To retain the body heat artificial coverings would have to be worn, which would prevent the skin being kept in a clean and healthy state; the people would have to live in enclosed rooms warmed artificially, and the purity of the air would present an almost insoluble problem, and so forth; a flight of fancy to show the importance of adequately allowing for man's adaptability.

Two disabilities can be definitely ascribed to tropical climates: (1) to keep the temperature normal the skin must always have a liberal

supply of blood, so that the emergency supply to other organs is not so great as in temperate climates; and (2) a fever temperature is very easily acquired in exertion, and this excess heat takes some time to escape, the result being that the combustions occurring in the body are quickened. Neither of these objections is considered to be serious. The author notes the relative immunity of Australia from heat-stroke. He is convinced that in India and Mesopotamia some disease like fulminating malaria is the cause: "the mere mention of dry skin preceding the fatal issue, is to me sufficient evidence to mark the condition as due to infection."

As to the favourable action of climate in developing the hardy races in the north of Europe, "the most furious assaults that Mediterranean civilisation ever encountered came from the scorching deserts of Asia and Africa." He suggests that houses in the tropics may in the future be made more habitable by cooling installations, and refers to the unsuitability of the buildings in tropical Australia.

"To sift out what is due to disease and what is due to climate is the problem which must be solved before we can speak dogmatically on the chances of the white man prospering in the tropics, and I venture to say this problem has not yet been properly attacked, largely through lack of evidence."

A. G. B.

YOUNG (W. J.). **The Metabolism of White Races Living in the Tropics. III. The Influence of External Temperature and Rate of Cooling upon the Respiratory Metabolism.**—*Ann. Trop. Med. & Parasit.* 1920. Mar. 15. Vol. 13. No. 4. pp. 313–337.

The author gives the following summary of this rather technical paper from the Biochemical Laboratory of the Australian Institute of Tropical Medicine:—

"During the hot season of the year a greater metabolism was observed than in the cooler season, excepting on certain days in the latter, when the rate of cooling was sufficiently great to cause the subject to shiver. This greater metabolism is attributed to the effects of the ordinary activities of everyday life which had preceded the actual experiment, which in the hot moist weather produce a greater increase in body temperature, and consequently in the metabolism, than in the cool season. These effects also are reduced much more slowly during the hot season, when the cooling power of the atmosphere is low, than during the cool weather when the cooling power is much greater. The effects of such conditions prior to the actual measurement have thus a larger influence on the level of metabolism in the hot season.

"With tropical heat the metabolism is at a high level on account of the increase in body temperature produced by even slight exertion, and which decreases only very gradually after the exertion has ceased. Cold may also increase the metabolism but by producing shivering and so increasing the muscular activity."

The experiments, the object of which was the investigation of the changes in the respiratory metabolism under different atmospheric conditions, were made at Townsville (19° S.), and extended over three years. The cooling power of the atmosphere was observed by means of Hill's katathermometers, as well as the ordinary dry and wet bulb thermometers. The results are given in the tables.

A. G. B.

MEDICAL RESEARCH COMMITTEE. (National Health Insurance.) Special Report Series, No. 32. **The Science of Ventilation and Open Air Treatment. Part I.** By Leonard HILL, Director of Department of Applied Physiology, Medical Research Committee.—249 pp. With 82 text figs. 1919. London: H.M. Stationery Office. [Price 10*s.* net.]

MEDICAL RESEARCH COUNCIL. (Privy Council.) Special Report Series, No. 52. **The Science of Ventilation and Open Air Treatment. Part II.** By Leonard HILL, Director of Department of Applied Physiology, Medical Research Council.—295 pp. With 52 text figs. 1920. London: H.M. Stationery Office. [Price 6*s.* net.]

These reports contain a large amount of original observation with the Kata-thermometer devised by the author, as well as extracts from literature both recent and old and weighty deductions. Part I. treats of the Kata observations, many of which were taken in Egypt, and some in Ceylon. Part II. contains much that is of interest to the dweller within the tropics. The information is so condensed that it is not suited for a digest, but numerous extracts may be given. The chapter on the colour of the skin and racial adaptation to climate is particularly interesting. The author writes :—

"Dr. M. Culpin tells me the children in North Australia wear great sun hats. When they stand in school their naked feet wet the floor with sweat. Convention keeps them clothed, pride of race making the mothers preserve their whiteness. They should be stripped but for shorts or some gauzy shirt widely open at the neck and with short sleeves. They should tan in the sun, be in and out of the water on the sea-coast, live free open-air lives. It is indoor conditions which make the women fade, age, and become barren. If white children were brought up in the tropics naked but for a loin-cloth in the open, they would grow up strong and healthy, but tanned all over. It is convention and caste that tell against comfort and health."

In the chapter on Heat-Stroke the author develops ideas which were summarized in this *Bulletin*, Vol. 16, p. 57–8.

The conclusions of the Section, which occupies 120 pages, are given thus :—

CONCLUSIONS AS TO COLOUR OF SKIN AND CLIMATE.

"(1) The primary function of pigment is to arrest excess of sunlight which has a lethal effect. This is shown by the fact that (1) the blackest races are to be found in dry, sunny climates with much sun glare from the ground, (2) dwellers in the arctic snows are pigmented, (3) whites exposed to direct sunlight or snow glare and becoming sunburnt pigment, and after pigmentation become immune to sunburn.

"(2) The ultra-violet rays (between 3,200 and 2,300 A.U.) have a specifically powerful lethal effect on bioplasm, but are filtered out by the horny layer of the epidermis. The red-yellow rays alone penetrate in any quantity through the epidermis and dermis, as is shown by a red glare seen through the cheek of a white man when a glow lamp is held in the mouth.

"(3) The visual rays, particularly those of the blue end of the spectrum, have a lethal effect on bioplasm if sufficiently powerful and prolonged in action.

"(4) Much of the sun rays are diffusively reflected by the scales of the scarf skin, still more by the film of moisture when the skin is wet with sweat. The practise of oiling the skin secures better diffusive reflection.

" (5) Arab horses and Indian cattle are protected from light by white or light-coloured short hair, which diffusively reflects, and a pigmented skin and panniculous adiposus, which absorbs the light that penetrates the hair.

" (6) Black skin round the orbits diminishes diffusive reflection into the eyes and so lessens sun glare. Artificial blackening has the same effect and is utilized by coolie mothers and mountain climbers.

" (7) Pigment placed in the deeper layers of the epidermis, by absorbing most of the visual rays which penetrate the horny layers, protect the blood and living tissues from the lethal effects of these rays.

" (8) The pigmented man can therefore have a much thinner horny layer and safely glow with flushed blood vessels, thus losing heat by radiation and convection, without risk of injurious effect from ground glare and sky shine, or from the direct sunlight, as he turns from shade to sun. A thin skin is important in promoting conduction, as the horny layer is an exceedingly bad conductor of heat.

" (9) The black skin absorbs far more sun rays than the white. But at body temperature the absorption and the emission of long radiations by the white and black skins is the same. The theory is erroneous which attributes the blackness of the negro to a higher emissive power suitable for a hot, shady, forest climate, and the whiteness of the white to a lower emissive power suitable for cold climates.

" (10) Any black surface is a trap for catching sun rays and converting these into heat rays, *i.e.* short into long radiations. The black fur and skin of a piebald animal shows a higher surface temperature than the white fur or skin.

" While it is an advantage to stop lethal rays by pigment, an extra tax is put on the heat regulating mechanism in getting rid of the heat into which the light rays are converted by the pigment.

" (11) The plexiform nerve endings lie between the pigment cells and, excited by the sun energy converted into heat (or possibly into chemical energy) by the pigment, cause (1) the black man to take shelter, (2) his cutaneous vessels to dilate, (3) his sweat glands to sweat.

" A black animal which cannot sweat is at a disadvantage in the sun, and if exposed to it requires frequent immersion in water.

" (12) The sweat protects from the sun's heat by virtue of (1) the 580 calories required for the evaporation of 1 grm. of water, (2) the glistening reflecting wet surface it gives to the skin, (3) the screen of water vapour it gives the steaming body.

" (13) As pigment renders the coloured man indifferent to sunburn, he can go naked and secure the full cooling power of the environment, with the heat lost by radiation, convection, and evaporation untrammelled by the confined atmosphere of house or clothes. He does, however, protect himself from the mid-day sun, and in America the negro wears clothes like the white man.

" (14) The white, in so far as he is afraid of sunburn, wears clothes from the point of view of caste and custom, and confines himself in shady, close places, is at a disadvantage from the point of view of heat loss. His customary diet, in particular the amount of protein consumed with its high specific dynamic energy, sets his heat production at too high a level.

" (15) When the white enters the tropics he should wear the loosest and lightest clothes and allow himself to become tanned, adjusting his diet and working hours to those of the natives, keeping up his metabolism by open-air exercise in the early morning hours, and sleeping away the heat of the day. He should use double-roofed shelters and conveyances, with free ventilation of the air space between the roofs. He should sleep on roofs exposed to the breeze, and use fans to work by. His clothes should be shorts and a white shirt with short wide sleeves and open at the neck and sides to allow free ventilation.

" (16) Custom and fashion should not forbid white women to secure in their dress sufficient exposure and ventilation of the body surface. They

should freely take exercise, and not confine themselves or their children within houses, or strive to preserve their whiteness of skin.

"(17) Experience of wiser customs would show how far the greater disability of white women to live healthily in the tropics and their lack of fertility is due to their greater confinement by clothes and within houses, their want of exercise and lower rate of metabolism.

"The climatic adaptation cannot depend merely on pigment, for a very moderate pigmentation, such as the yellow of the Mongol, or the sunburn pigmentation of the white, suffices to prevent the lethal effect of the sun. Moreover, the pigmented Esquimaux is not fitted by his pigment to stand a tropical climate. The blackest races do not face the noon-day sun, but work in the early morning hours, and secure the protection of shade in the day-time. Arabs, Hindus, etc., protect themselves with clothes from the sun.

"(18) There appears to be a correlation between the metabolism and heat-losing mechanism, which adjusts the race to the climate it has been evolved in. The kind of cattle found suitable for tropical climates, *e.g.*, for draught oxen, have light hair and pigmented skins. Arab horses have pigmented skins. The native human races adapted to the tropics are pigmented. Pigment is then a sign of adaptation.

"(19) By the elimination of tropical parasitic insect- and water-born diseases the tropics can be made far more healthy for whites, and field labour in the tropics can be successfully endured by white men, but the women appear to age early and become barren.

"It probably is the stagnant, moist environment produced by clothes and houses which tells against the metabolism and health of women. The men working stripped in the open keep up their metabolism and vigour. A more open life for women, the better construction of houses, and the wearing of clothes as suitable as those worn by the men may prevent these ill effects.

"(20) The same comfortable, happy home life and enjoyment of field labour is not secured by whites in the tropics as in temperate climates.

"To meet the conditions a virile fully-adapted race can no doubt be evolved slowly by natural selection of survivors, quickly by inter-breeding, *e.g.*, a cross between Mongol or Amer-Indian and European is said to produce most virile types.

"If tropical Australia is kept 'all white' by legal enactment, probably such cross-breeds who pass as whites and gain entry may be the survivors and their children come to people the land."

Another very interesting chapter is that concerning clothes.

"The claimants for systems of clothing all wool, linen, etc., have based their claims on the nature of the material—on the fibre—while the properties of a garment depend almost wholly not on the fibre, but on the manner of its weaving, and the same results can be secured with wool, cotton, or linen by weaving out of each a material with the same porosity and air-holding power, permeability to moving air, and water-evaporating power. . . . .

"Wool next to the skin is warmer because it is thicker than a smooth fine cotton or linen garment. A fine linen handkerchief lets ten times more heat through than a flannel shirt because of its thinness. Weave the linen equally thick and porous (air-holding) and it is as warm. . . . .

"Clothes for the tropics should have great reflective power, little absorptive power, allow little penetration of the sun's rays, and good ventilation—a flapping, loose robe, such as is worn by the Arabs, provides the requirements, or loose shorts widely open at the knees, and a shirt short in the arms and with slits at the sides and low-cut collar-band. Free ventilation is the great thing. A loose shirt is far better than a close-fitting tunic. Shorts require flaps to turn down at night to prevent mosquito bites. The axilla should be shaved. The sun helmet of

the lightest pattern should be fitted with a Simpson net-hood (non-inflammable) which allows smoking and prevents insects biting. (A. Balfour)."

Lastly, one extract from the chapter on Ventilation and Heating.

"For cooling tropical houses compressed-air douches could be used, as air escaping from compression is both cool and dry. Fans and punkhas are the ready means of cooling in hot weather.

"In the tropics the house must be set open by night to cool, and closed up in the heat of the day, the air within being then blown about by fans. By this means a house has been kept with the dry bulb 30° C. lower than the outside air. Tropical houses should have thick walls (mud bricks are excellent) painted white, with double roofs (reed thatching is excellent), the space between the roofs ventilated (ventilators protected by copper gauze against insects). The effect of a coat of limewash containing 15 per cent. of vegetable oil was to lower the temperature under a roof from 124° to 98° F. Wide verandahs, double roofed and ventilated, should protect the sun-exposed side. The house should be orientated so that the prevailing wind blows through it, ample inlets and exits being provided in each room, and louvred shutters to these."

A. G. B.

MacKinnon (Murdoch). **European Children in the Tropical Highlands.** —*Lancet.* 1920. Nov. 6. pp. 944–945.

The author, Consulting Physician to the European schools, Nairobi, records the conditions found on examination of the hearts of 200 children resident in British East Africa; all were either born in the country or resident there 2–10 years. Nairobi has an altitude of 6,000 feet, is three degrees south of the equator, and possesses, according to the author, the finest climate in the world. He considers that only by the study of comparative statistics like these can a conclusion be arrived at as to the suitability of a given tropical country for permanent European settlement. It appeared to him that breathlessness and lassitude are two of the most noticeable changes occurring in European children of school age. The children were from 7 to 18 years of age, and the observations, taken at rest and after exercise, included the pulse-rate, respiration-rate, area of cardiac dullness, and blood pressure. The exercise consisted of a run of 50 yards in a circle. The average pulse-rate at rest in children of 7–10 was 93 per minute; and from 10–15 it was 86. [The number of children at the respective ages is not stated.] After exercise there was an increase of rate of 37 beats per minute. The return to the normal after exercise took on an average 22 minutes, a much longer time than has been recorded in healthy hearts at lower altitudes in temperate regions. After exercise 12 per cent. of the cases showed some irregularity, usually a missed beat with an apparent slowing of the pulse, but after the age of 14 no irregularity was noticed. Definite dilatation of the heart, determined by auscultation, was present in 6 per cent. Only one child born in the country was suspected of having an organic lesion, and two others in whom there was a murmur came from South Africa. "Rheumatic fever and chorea . . . are very rarely seen among children in tropical Africa." The author stresses the importance of the delay in return to the normal pulse-rate, as indicating the amount and nature of exercise permissible.

A. G. B.

McCollum (E. V.). **Nutrition and Physical Efficiency.**—*Jl. of the Franklin Institute.* 1920. Apr. [Reprinted in *School of Hygiene and Public Health. Johns Hopkins University. Collected Papers.* 1919–1920. June. Vol. 1. 20 pp.]

To readers of the *Bulletin* the most interesting part of this arresting paper is that wherein the author expresses the opinion that the success or failure of nations has depended on their diet, rather than, as is commonly asserted, on climate.

He points out that any appraisal of the quality of a diet must include a consideration of the quality as well as quantity of protein; the content of each of the necessary mineral elements—calcium, magnesium, sodium, potassium, chlorine, phosphorus, sulphur, iron and iodine; the content of each of the substances which are concerned with the etiology of the deficiency diseases—fat-soluble A, water-soluble B, water-soluble C; and the availability of the carbohydrates. He thinks that fats are dispensable, but it has not hitherto been possible to nourish an animal on fat-free diet, because the essential fat-soluble A is not found apart from certain fats. He reminds us that fat-soluble A is found chiefly in butter-fat and egg-yolk fats, in fats from the interior of the cells of the glandular organs of animals, and, next in importance, the leaves of plants; that water-soluble (anti-neuritic) B is widely distributed in natural foodstuffs, especially in whole seed products, tubers and fleshy roots, leafy foods, milk and eggs, and that, whereas muscle cuts of meat are very poor in it, the glandular organs contain it in abundance; and that water-soluble C is abundant only in fresh vegetables, fruits and fresh milk from cows which are on pasture, this being the least stable of the three.

"All the cereal grains, legume seeds, tubers and edible roots are deficient in some degree in at least three dietary factors. All contain proteins of relatively poor quality; all contain too little of certain mineral elements, especially calcium, sodium and chlorine, and all are deficient in fat-soluble A." They are incomplete foods. "The muscle tissue has dietary properties almost identical with the seed, tuber or root in all respects except its richness in protein. It lacks sufficient calcium, sodium and chlorine, fat-soluble A, water-soluble B, and water-soluble C. The glandular organs, such as the liver and kidney, are much more nearly complete foods. Indeed, they have all the complexes which are essential for the construction of living tissue, and when supplemented with a carbohydrate, such as starch, approximate much more nearly a complete food than would a similar amount of muscle tissue with starch.

"Since there are closely similar dietary properties in the storage tissues of plants and of muscle tissue of animals, it should be expected that mixtures of these even in considerable numbers should not form satisfactory diets. This has been shown in many feeding experiments to be the case. Although it is possible for a young animal to grow on a seed, tuber, root and muscle cut of meat diet, its growth is never normal in rate or extent. It will always be stunted, and will fall below the normal standard of performance in reproduction and rearing of young, and in span of life.

"Consistently unsatisfactory results have been secured on diets consisting of wheat flour, corn meal, rice, peas, beans, potato, turnip, beet, rolled oats and round steak. The round steak was included to the extent of ten per cent. of the dry matter of the diet."

Experiments on animals, covering a period of twelve years, have shown that they can be nourished on three types of diet:—(1) Carnivorous, provided that blood, liver and kidney, together with bone, are selected; if muscle tissue is given, it must be liberally supplemented with blood or glandular organs and bone. (2) Seed, tuber, roots and

muscle, with liberal amounts of leafy vegetables. (3) Seeds, tubers, roots, with or without meat, supplemented with liberal amounts of milk.

Leafy vegetables and milk he has been accustomed to designate as *protective foods*. "They are protective foods because they are especially rich in just those elements and complexes in which the storage tissues of plants and muscle tissue are poor."

The author goes on to say that the more advanced peoples of the world are those who live on the vegetable and meat diet supplemented with milk and its products, while the second class in respect to advancement and aggressiveness are those who eat liberally of the leafy vegetables. He illustrates his argument by the case of the whites of the Bahamas who are the descendants of virile Southern settlers, as contrasted with that of other loyalists who at the time of the revolution emigrated to Canada. The former have degenerated into "poor whites." This has been explained by the respective character of the climates, but in support of a different opinion he cites the following result of experimental work.

"When a full-grown animal, such as a rat, is placed on a diet of seeds, tubers, fleshy roots and muscle meats, it begins to hurry through its span of life, developing the characteristics of old age at a rate double or more the rate observed in a well-nourished animal. It does not succeed well with the nutrition of its offspring, and dies at a fairly early age. The young, if restricted to the diet of the parents, are never their equal physically, have poor success with their young, *live much less long* than the species is capable of, and are subject to infections and abnormalities in a degree unknown in their ancestors. With each succeeding generation weaklings predominate, and the strain dies out within a few generations." He continues: "If we apply to the natives of the Bahamas the test of nutrition, we find that the diet is of such a character as to account for degeneration in considerable degree within the period since the islands were settled by loyal Tories, who were not willing to live under the Stars and Stripes. During this period they have depended for their food supply largely on citrus fruits, pomegranates, pineapples, bananas, melons, yams, potatoes, guinea corn and peas. This, it will be noted, is a list consisting of fruits and other storage tissues of plants. It has been supplemented with a certain amount of animal foods, principally fish, although some muscle meats from mammals have been eaten. This type of diet it will be remembered is unsatisfactory for the nutrition of an animal over many generations, and leads to deterioration in the stock. This is the condition found in the Bahamas.

"On the other hand, the people of Canada have lived essentially on the same type of diet as that employed in the northern United States. It includes all the products of field and garden with which we are familiar, together with meats in liberal amounts and dairy products in moderate quantities. The latter is the kind of diet which supports the civilization of England, and also the most progressive European countries, as well as that of the northern United States and all other parts of the world which have been peopled by colonization from European stock, wherever the climate will permit."

Other instances given by the author are the beriberi of Newfoundland and Labrador, where the diet consists of bread made from bolted wheat flour, tea, fish and salt meats, and raisins, and the "night-blindness" found in the same region and in Canada, the popular local remedy for which is to give the patient milk and cheese. In the lumber camps the food supply is frequently limited to bread, salt or canned meats, and peas or beans.

In Japan and in parts of India the same condition occurs, and the popular remedy is liver and in Japan eel fat.

Wherever fermented milks are extensively used as foods—the author instances the Mongol hordes of Central Asia of the 13th to the 16th centuries, the ancestors of the present Turks, the Arabs—the physical development is unusually good, and the length of life exceptionally long in many instances. METCHNIKOFF was correct in attributing the longevity of the Bulgarian peasants to the milk they drank, but probably incorrect in tracing it to the lactic acid bacillus. As to the handicaps of the tropics—

" Wherever insect life, such as the destructive ants of tropical forests or myriads of mosquitoes and other insects, detract from the comfort of man, and where rank vegetation renders futile his efforts at clearing ground for cultivation, and where diseases destroy his domestic animals, and place in his own blood disease-producing organisms which rob him of his vitality and ambition, man must have recourse to power other than his own strength to overcome his obstacles. If we give him the aid of machinery and control over suitable sources of power to free him from his crushing burdens, and the aid of science to free him from the scourge of disease, and a diet which causes him to develop a high state of physical perfection, then we may confidently expect of him any development of mental traits consistent with his heredity."

Finally, the author comes to the need of the education of the public in the United States to the proper selection of food. " Variety, palatability and appropriate chemical composition as revealed by the best methods of analysis at our disposal do not necessarily guarantee safety." " Early ageing and low vitality, with consequent susceptibility to disease, attend the adherence to an unsatisfactory diet." In certain places man " is attempting to live on diets which cost him his vitality by the time he had reached an age which should find him enjoying the full vigour of middle life. This is the seed, tuber, and meat type of diet which has already been described."

" Many people who live almost exclusively on cooked foods come very near the point of specific starvation " for water-soluble C, and narrowly escape developing scurvy.

The American Indian lives out of doors all the summer, but there is no group of people anywhere that is dying more rapidly from tuberculosis. This has been attributed to racial susceptibility, but the author notes that the Indian has no interest in agriculture, and lives on the products he buys at the agency stores, which consist almost wholly of degerminated cereal products, legume seeds, tubers and meats.

In concluding, the author stresses the need for the education of the public along two lines—in the use of dairy products and the free consumption of green leafy vegetables.

A. G. B.

GEORGELIN. **Notes médicales sur le Gabon. Les facteurs de dépopulation.**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1920. (numéro exceptionnel) pp. 58–64.

The author draws attention to the question of labour in French Equatorial Africa, and especially in Gabon. Unskilled labour is deficient both in quantity and quality; and the deficiency increases. If an

employer has managed to collect sufficient natives, it often happens that half are rejected at the medical examination, and the most usual cause is that the men are weakly, poorly developed, and in a state of defective nutrition, incapable of resistance to fatigue and disease. This is the case with all the tribes except the invading Pahouins, who seem more robust, though when they reach the neighbourhood of the coast they show no more resistance to disease than do the other tribes.

There are no available statistics, but the author has collected some figures. Thus in a group of 30 villages, in which sleeping sickness was rare, the mortality among the 1,566 inhabitants was 175 per mille. A special enquiry was made among people of six different tribes. Thirty-five heads of families had 154 wives, which the author reckons at 154 couples. Of these women 77 had not borne children, or 50 per cent. The other 77 had borne 189, but of these 95 had died before reaching the age of 17 years. It is not surprising that the population is diminishing. The chief factor in the depopulation is the insufficiency of food. The composition of the native's ration is faulty; albumens and fats are deficient, and the native has become habituated to this privation. From this cause the people do not resist infectious diseases, especially those of the respiratory tract, such as pneumonia and broncho-pneumonia. Parasitic affections take the third place, and of these the chief is trypanosomiasis; to trypanosomiasis the author assigns one-fifth of the deaths. Syphilis is very common, and is an important factor in depopulation; it produces abortion, kills the children that are born, and causes sterility. A large part of the infantile mortality is attributed to congenital syphilis; other causes are gastro-enteritis, malaria, and affections of the lungs.

If this state of things is to be remedied the natives must feed more and better; it is a question of cultivation. Without such an improvement medical relief can accomplish little, and the disappearance of the native population will be only a question of time. The economic future of the country is at stake. [An interesting paper, but it would be of value to have details of the ration of these natives, and some evidence that the causes of the infantile mortality are as stated. None is here given. The reader may refer to papers by Jamot, who describes a similar state of defective nutrition in another part of the same colony, and also those of Rivers and Rose (this *Bulletin*, Vol. 16, pp. 228, 236 and 239).]

A. G. B.

Härle. **Arztliche Erfahrungen aus einer siebenjährigen Arbeit in Mesopotamien.** [A Physician's Experiences during Seven Years' Practice in Mesopotamia.]—*Arch. f. Schiffs-u. Trop. Hyg.* 1920. Vol. 24. No. 10. pp. 297–314. With 1 text-fig.

This is a lecture delivered before a Medical Society in Germany. It is chatty, and does not convey much precise information. Subjects touched on are malaria, tuberculosis, dysentery, cholera, plague, leprosy, kala azar [the information here is derived from Külz, *see* this *Bulletin*, Vol. 15, p. 281], vesical calculus, of which bilharziasis is given as the chief cause [news of a mollusc intermediary has evidently not reached the author], hernias which may reach a very large size, liver abscess and hydatid cyst of the liver and spleen (4 cases).

A. G. B.

COUREAUD (H. H. L.). **Notes de géographie médicale recueillies dans le Pacifique.**— *Arch. Méd. et Pharm. Nav.* 1920. Sept. Vol. 110. No. 3. pp. 213–220.

The author was surgeon for 18 months on a guard-ship, the duties of which were to cruise between the ports of New Caledonia and those of the Loyalty Isles, the New Hebrides and the Wallis Isles.

New Caledonia. Loyalty Isles.—Tuberculosis, of relatively recent introduction, is common. Plague appeared in New Caledonia in December, 1899; it was imported with sacks of jute from Bombay. It is now endemic in the north-east part of the island, and there have since been several epidemics, the last September–December, 1912. In May, 1913, the municipal council of Nouméa approved a sanitary ruling fixing the conditions of habitability of houses, details of which are given. A laboratory was created at the same time. There are two leproseries on the island, and frequent inspection of the natives here and on the Loyalty Isles are made with a view to isolating cases of leprosy.

New Hebrides.—In these islands, lying to the north, which are administered jointly by the British and French, the climatic conditions are somewhat different, the temperature averaging 33°, instead of 22°, and the humidity being greater.

Dysentery and malaria are prevalent, and the latter is severe. Tuberculosis, favoured by deplorable hygienic conditions, is rapidly extending. The various islands get medical assistance only from the guard-ship, which visits them at irregular intervals. In 1910 there were three hospitals, but in the same year one was destroyed by an earthquake, in 1913 the English hospital in Ambrym was swallowed up by a volcanic eruption, so that only a French hospital remained. This is at Vila, and is under the charge of a surgeon-major. It appears to be a large, solid and well-fitted building in which both Europeans and natives are accommodated. There is also on the island Iriki an English hospital, directed by a Presbyterian pastor.

Wallis Isles.—These lie north-east of Fiji, and have about 5,000 inhabitants. They are Polynesians, active, intelligent and clean, living in good houses. There are some cases of leprosy, which are isolated in the English island, Naicaï, near Fiji, or are removed to Nouméa. Besides yaws and tokelau the most frequent disease is elephantiasis, believed to be caused by *Filaria Bancrofti*. Forty per cent. have it, and the patients have to go to English hospitals on the Fiji Islands.

A. G. B.

CLARK (Herbert C.). **A Chart Presenting the Incidence of the More Common Causes of Death on the Panama Canal Zone as found at Autopsy during the Years 1904 to 1916 inclusive.**—*Proc. Med. Assoc. Isthm. Canal Zone.* 1917. July–Dec. Vol. 10. Part 2. pp. 20–23. With 2 tables in text.

The tables here reproduced explain themselves :—

TABLE I.

Showing the More Common Causes of Death at Autopsy in the Board of Health Laboratory, 1904–1916.

Year.	Autopsies performed per year.	Pneumonia.	Tuberculosis.	Haemoglobinuric fever; malaria.	Affections produced by external causes.	Chronic nephritis.	Combined types of dysentery.	Organic heart disease.	Typhoid.	(Children). Diarrhoea and enteritis	Cancer.
1904 ..	6	1	1	..	..	..	..	..	..	..	..
1905 ..	269	60	9	27	3	8	5	3	9	..	2
1906 ..	509	191	22	50	24	23	39	15	33	..	2
1907 ..	496	156	35	27	40	27	36	12	48	4	4
1908 ..	361	59	63	46	26	25	23	11	14	..	7
1909 ..	295	55	37	26	32	31	11	17	11	1	5
1910 ..	451	50	91	52	30	37	36	16	10	6	4
1911 ..	508	83	102	41	38	36	19	20	9	11	11
1912 ..	425	53	79	23	37	27	15	22	6	7	11
1913 ..	460	47	89	21	34	26	8	26	5	23	12
1914 ..	375	36	78	6	38	12	6	27	5	14	3
1915 ..	328	38	56	14	20	12	5	14	2	15	10
1916 ..	323	25	81	8	17	20	7	10	6	9	7
Totals ..	4,806	844	743	341	339	284	210	193	168	90	78

TABLE II.

Showing Number of Autopsies Revealing the following Diseases per Year, 1904–1916.

Year.	Autopsies performed per year.	Yellow fever.	Beriberi.	Ankylostomiasis.	Tetanus.	Infectious diseases of children.	Plague.	Smallpox.	Snake bite. Cholera. Filariasis.
1904 ..	6	—	—	—	—	—	—	—	—
1905 ..	269	12	7	7	2	—	1	—	—
1906 ..	509	1	5	4	—	—	—	—	—
1907 ..	496	—	1	2	1	—	—	—	—
1908 ..	361	—	1	2	3	—	—	—	—
1909 ..	295	2	—	—	—	—	1	—	—
1910 ..	451	2	—	—	—	—	—	—	—
1911 ..	508	—	1	1	1	—	1	—	—
1912 ..	425	1	—	—	1	4	—	—	—
1913 ..	460	—	—	2	3	1	—	—	—
1914 ..	375	—	1	—	4	2	—	—	—
1915 ..	328	3	1	—	2	1	—	—	—
1916 ..	323	—	2	—	—	3	—	1	—
Totals ..	4,806	21	19	18	17	11	3	1	—

Table II shows how seldom the causes therein tabulated are met with at autopsy. Note that malaria, haemoglobinuric fever, typhoid and the various types of dysentery have rapidly declined. Most of the cardiac disease is the result of either syphilis or of extreme degrees of chronic nephritis. Note also the comparative rarity of tetanus among a labouring population. "At the present time one can see but little difference in the variety and relative importance of the causes of death on the Canal Zone as compared with those in the large hospitals in any seaboard city of the United States."

The population has always been chiefly composed of young adult male negroes, and 70 to 90 per cent. of all bodies from the service of Ancon Hospital, "as well as many from outside points," are examined.

A. G. B.

PHEAR (Arthur G.). **Medical Experiences in Macedonia and the Caucasus. A Lecture Delivered before a Meeting of the Royal Society of Medicine.**—*Lancet.* 1920. July 10. pp. 56–68. With 5 text figs.

This lecture, delivered by a Consulting Physician to the British Salonika Force and the Army of the Black Sea, contains much that is of interest, though the lecturer apologises for the fragmentary nature of the records.

After describing the hospital accommodation at Salonika and its neighbourhood, with some remarks on the climate, he considers, in turn, malaria, blackwater fever, dysentery, enterica, influenza, sand-fly fever, typhus and relapsing fever.

Malaria.—The lecturer laid stress on the difficulty of diagnosis in subtertian and "recurrent" malaria. Some cases simulated acute dysentery, others cholera, others one of the enteric group. Appendicitis was often diagnosed, and the abdomen opened on some occasions.

When influenza was prevalent, diagnosis was rendered doubly difficult, and at one time there was a third factor—sand-fly fever. The examination of a blood film in every case was impossible.

As after effects, he instances the large proportion of cases of D.A.H., various psychoses and cachexia, with different types of anaemia.

On treatment the author has already written [*see* this *Bulletin*, Vol. 15, p. 409]. As to quinine, he was impressed by the remarkable contrast between its controlling influence over the acuter manifestations and its comparative failure to prevent relapses.

He favours the intramuscular route in cases where there are objections to the oral, and considers the risk of local complications negligible if ordinary precautions are taken. It will be remembered that DUDGEON'S work was done in this area [*see* this *Bulletin*, Vol. 15, p. 119]. Phear says that on a low computation not less than 18,000 injections were given, and permanent disability was the rarest event.

Of unfavourable symptoms, resulting from the administration of large doses of quinine, the author saw few. There were twelve cases of quinine amblyopia in 1917, in two of which large quantities were taken by mistake. Details are given of some of the others. In one, complete blindness followed doses of 55, 60 and 20 grs. on three successive days; it is not stated whether quinine had been taken prior to these doses.

The shifting of the troops to the neighbourhood of Constantinople and to the Caucasus was followed by marked improvement in the health

of the Army, and the place of malaria was taken by typhus, smallpox and relapsing fever, but these diseases were always under control.

Blackwater Fever.—During the year ended October 31, 1918, 136 cases were reported, with a case mortality of 26·5 per cent. A chart shows that a great majority of cases occurred between December and April, with a maximum in February, a season when malarial activity is at its lowest. In only 27 per cent. of a series of 58 cases, carefully examined, were parasites found, benign tertian in seven cases, subtertian in four and indeterminate forms in five. There was no special relation to quinine taking. [For other details, *see* this *Bulletin*, Vol. 15, p. 430.]

The most useful therapeutic measure was the introduction of large quantities of fluid, and SOUTTAR'S apparatus was of great value, because, by it, five to six pints of saline fluid could be introduced into the rectum in 24 hours.

Dysentery.—The total number of admissions for the three years was 21,147. The case mortality was 1·9 per cent. But the figures have only a relative value, as the diagnosis was based on symptoms.

The curve of dysentery was found to correspond closely with that of fly prevalence, the maxima occurring in late June and July, and again at the end of October or early in November. The author discusses cases that resembled cholera, a group characterised by oedema, of which ascites is often a prominent symptom, rare cases of haemorrhage and perforation, arthritis, which was nearly always preceded by conjunctivitis, and nervous complications.

Under the last heading the case is detailed of a man, who after a second course of emetine for amoebic dysentery developed paresis of the legs, loss of knee-jerks, difficulty in swallowing and hoarseness of voice, followed by increased paralysis of muscles, including the diaphragm, incontinence of urine and faeces and death. [The symptoms are not inconsistent with emetine poisoning; the dosage is not given.]

Details are given of two unusual cases of amoebic hepatitis.

The serum treatment of bacillary dysentery was found valuable if a large quantity was given early in the case, though the serum available was deficient in agglutinins for B. Shiga; 80–100 cc. were given subcutaneously on admission, and repeated the next day and the two or three following days in the same or reduced amount.

Enteric Group.—There was a drop from 11·7 per 1,000 troops in 1916 to 0·84 in 1918. Of the three forms, paratyphoid A was the commonest. Only 65 deaths occurred during the whole period.

A. G. B.

THIROUX (A.). **Les anémies graves consécutives à des infections multiples en Annam. Ankylostomiase, paludisme, et syphilis associés.**—*Bull. Acad. Méd.* 1920. Oct. 12. Vol. 84. No. 31. pp. 130–132.

The greatest number of admissions into hospitals in Annam are for anaemia. In the war 80 per cent. of the recruits were found to harbour ankylostomes, and the same is the case in the hospital statistics. In thousands of stool examinations after thymol *Necator americanus* alone has been found. The author suggests that this parasite produces a toxin capable of causing deep anasarca; after large doses of thymol

the swelling may disappear in 24–48 hours, and the patients are suddenly deflated like a pricked bladder. The author associates thymol, " the only anthelminthic of any value," with senna powder and calomel. Thus :—

Thymol 6–8 gms., senna powder 10 gms., calomel 0·5 gm. Make 16 cachets, and take four at one hour's interval. Milk diet on the preceding evening.

The result is definitive expulsion in 75 per cent. of cases, verified by three examinations at two days' intervals. The American method, 6–8 gms. thymol, with a purgative before and after, in his hands gave only 50 per cent. of cures.

Of these anaemic patients, however, 75 per cent. have also malaria ; in 50 per cent. the parasites are found, and the rest are improved by administration of quinine to a degree not reached with thymol alone. But even when these patients are cured of their verminous and malarial infections many remain anaemic and feeble. An obvious conclusion is that the organism is so damaged that repair is impossible, but, says the author, it is often nothing of the kind. He noticed that several had syphilitic signs, and applying to all the Bordet-Wassermann test found that in 95 per cent. the reaction was positive. Under specific treatment recovery was rapid. The only incurable cases are those in which there is also advanced kidney disease or tuberculosis. These forms of anaemia, the author concludes, constitute the chief factor of depopulation in Annam.

A. G. B.

SARRAILHÉ (A.). **Les anémies et la méthode de Carnot.**—*Bull. Soc. Méd.-Chirurg. Indochine.* 1920. Aug. Vol. 11. No. 2. pp. 26–49.

The author notes that anaemia is a common cause of invaliding to France of Europeans stationed in Indo-China. In the period 1917–1918 this was the cause in 28·4 per cent. of the total. It is obviously a costly method of cure. His object was to find a method of restoring such patients to health in the colony itself. The principle of the method of CARNOT is the property possessed by the serum of a bled animal, when it is collected in the period of blood regeneration, of exciting the function of the bone marrow and haemopoietic organs, and of inducing in them an overproduction of red blood cells. This method was employed in the case of 42 patients already reported on. In the present paper chronic malarial patients were employed, but many of these relapsed during treatment, in which case any benefit which had accrued was lost, but in 12 cases, which did not relapse, the injection of the serum of bled rabbits produced remarkable and lasting results.

A blood count is made and the haemoglobin estimated ; 20 to 40 cc. of clear, unheated rabbit serum is then run into the veins ; every six to seven days the estimation and injection is repeated, the number of injections depending on the curve of weight and the rapidity of the return of the blood to the normal, a matter generally of four or five weeks. As a rule, the condition of the patient improves rapidly, and profound weakness, anorexia and insomnia disappear as the number of red cells increases. Most of the cases recover their strength in the colony. Ten " observations " follow, and upon these the author comments. He notes that the number of red cells increases after each injection, on an average, by 650,000. The cause of the anaemia must,

of course, be combated, but in the severe anaemias which are now in question this will not by itself make up the deficit in the red cells. In one patient in whose case improvement was only fugitive the rabbits employed were found to suffer from anaemia, and the trial of another batch was successful. For practitioners who have not access to a laboratory the author recommends the use of "Haemostyl Roussel," serum of bled horse prepared according to CARNOT'S principles. It is put up in ampoules containing 10 cc., or dried in tablets. The author intends making a more careful trial of this than he has hitherto been able.

A. G. B.

LESK (Robert). **Beitrag zur chirurgischen Behandlung der Elephantiasis in den Tropen.** [The Surgical Treatment of Elephantiasis in the Tropics.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1920. Vol. 60. No. 4. pp. 573–585. With 2 plates.

This paper comprises a discussion of the relation of *F. bancrofti* infection to elephantiasis. Of 25 cases observed (in the Dutch East Indies) the scrotum was concerned in five cases, the penis in two, the clitoris in one, the fore-arm in one; the rest were leg cases. The principles of treatment are discussed and operations done by the author are briefly described, especially one in which a scrotal tumour, weighing 23·5 kilos, was removed. The patient's photograph is given and a diagram showing the lines of incision.

A. G. B.

HOWARD (Robert). **A Note on the Use of the Tourniquet in Operations for Elephantiasis Scroti.**—*Jl. Trop. Med. & Hyg.* 1920. July 15. Vol. 23. No. 14. p. 183.

The author alludes to the difficulty in restraining haemorrhage in the operation for elephantiasis of the scrotum. The figure of eight arrangement of the tourniquet, originally recommended by MANSON, has disadvantages in that it is difficult with it to maintain asepsis, and that owing to the oblique pull of the elastic bleeding is incompletely controlled. He recommends that the cord be simply wound tightly round the neck of the tumour.

"When the time comes for its removal, one has only to remove the forceps or grip which is lying on the towel just in front of the pubes. To prevent slipping when the tumour is removed, towel clips should be inserted into the skin, one on either side, just below the tourniquet; failing towel clips, tissue forceps will answer as well. Such a tourniquet cannot slip, and, in my experience, it never fails to completely control arterial haemorrhage. I attribute this to the fact that the pressure on the elastic is applied directly all round the neck of the tumour."

A. G. B.

HOSAIN (Saiyed Tahawa). **Elephantiasis Scroti (weighing 36 lb.)**—*Indian Med. Gaz.* 1920. July. Vol. 55. No. 7. p. 259. With 2 text figs.

Photographs present the patient, a native of Mahenge, Tanganyika Territory, before and after operation, of which no details are given.

A. G. B.

Aoki (T.) & Sasakawa (M.). **Ueber das Lymph-scrotum mit seiner histologischen Untersuchung.** [On the Lymph-Scrotum and its Histological Examination.]—*Japan. Ztschr. f. Dermat. u. Urol. (Jap. Jl. Dermat. and Urology.)* 1920. May. Vol. 20. No. 5. In Japanese. pp. 383–388. With 1 plate. [English Summary. pp. 46–47.]

"Lymph-scrotum is by no means an uncommon affection in Japan, in the endemic area of *Filaria nocturna*. In time, the scrotum tends to become permanently thickened and to pass into a state of confirmed elephantiasis. From ordinary elephantiasis of the scrotum, however, it is distinguished by the following points.

"(1) On inspection the scrotum presents a few, or a large number of, smaller or larger specifical lymphatic varices.

"(2) When pricked or when they are ruptured spontaneously, large quantities of a clear, or a milky, or a sanguinolent-looking, lymphatic fluid escapes. Examined with the microscope, it is found to contain embryo filaria usually.

"(3) To the touch the scrotum feels rather soft, and somewhat enlarged, perhaps to twice or three times the normal size."

"In our case, in spite of the fact that the discharge was chylous and filariae were present in the blood, the parent worm has been found in the lymphatic varices of the scrotum by the authors."

A. G. B.

Verdelet (Louis). **Adénites épitrochléennes inflammatoires chez les indigènes de nos colonies.**—*Caducée.* 1920. Sept. 1. Vol. 20. No. 17. p. 256.

The author has had under his care in Bordeaux and elsewhere many natives of French colonies, blacks, Moroccans, Annamites, or Algerians, for wounds of the hands and fore-arms, and has been struck by the frequency of epitrochlear adenitis, either simple enlargement or inflammation going on to suppuration, an affection which is comparatively rare under the same conditions in the white race.

A. G. B.

Welch (T. B.). **Observations on a Case of Onyalai in the East African Protectorate.**—*Jl. Trop. Med. & Hyg.* 1920. June 1. Vol. 23. No. 11. pp. 138–140.

Onyalai was first described by Yale Massey (1904) in Angola, and subsequently by other observers in Tropical Africa. The author records a case from Fort Hall. The native, who walked 35 miles to the hospital, was bleeding from the mouth at the rate of half a pint in twelve hours. There were bullae, or ulcers, in mouth, nose and skin. The mouth lesions are carefully described; there were four here and 18 bullae in all on the skin, circular in shape and under one-fourth of an inch in diameter, mostly on the chest and abdomen. If the skin were removed there was free bleeding. The urine contained much blood. Whether haemorrhage came also from the intestine was uncertain. Fresh lesions continued to appear till the 18th day. The patient felt well throughout, and his temperature was usually subnormal. No light is thrown on the nature of the disease.

A. G. B.

Bouffard (G.). **De la Pyomyosite, maladie humaine à** *Pasteurella*. — *Bull. Soc. Path. Exot.* 1920. June 9. Vol. 13. No. 6. pp. 398–408.

The author refers to a paper by Commes, in which he described four cases of intramuscular suppuration in natives of Bamako, associated with fever, and the finding of a cocco-bacillus, which he was able to cultivate, having the characters of Pasteurella; Commes found the organism to be identical with that discovered by the present author in similar cases in 1909 [*see* this *Bulletin*, Vol. 13, p. 368]. The disease begins suddenly, with rigors and high temperature, exceeding 40°, together with violent pain, either general or localized. The patient is prostrated, and has the facies of enteric. Examination reveals nothing definite. After 48 hours, or sometimes a week, signs of suppuration become evident. The painful part becomes swollen, red and very tender. A deep, hard mass is felt. Next day the centre is resistant to pressure, or even fluctuating. On deep incision reddish pus, resembling liver pus, is evacuated. The temperature now falls below 38° and improvement is definite, but there is fever in the evening and strength is not regained. Suddenly the fever lights up again, prostration reappears, and one or more fresh abscesses are formed. There may be a third and a fourth relapse before convalescence sets in. The disease lasts from 6 to 16 weeks. Often the abscesses are symmetrical, developing simultaneously or at long intervals. In exceptional cases the intramuscular swellings do not go on to suppuration.

In 1909 Sarrailhé described a similar disease from Tonkin, of which he believed a staphylococcus to be the cause. Bouffard believes the condition to be limited to Africa and to be found in the basins of the Upper Niger and Upper Senegal rivers. Five illustrative cases are given, in two of which the patient died; the cocco-bacillus was isolated twice.

Smears from the pus, coloured with an aniline dye, show cocco-bacilli and no other organism; they are strongly stained at the ends and clear in the centre; they are rather infrequent, and are grouped some 15 together; they do not retain Gram. By aseptic puncture of an abscess and inoculation of agar they are easily obtained in pure culture. After 36 hours in the incubator at 38° one sees little round whitish colonies, lighter in the centre than at the edge; the water of condensation is cloudy, and covered with a wrinkled veil; on the third day the colonies are depressed and puckered (*gaufré*) at the centre, smooth and thick at the edge, and on the eighth day they are dry and wrinkled all over. On ordinary broth the white veil appears as on the condensation water of agar. No growth takes place on potato.

For inoculation rabbits were used—other animals being scarce. Emulsions of cultures were employed in every instance. Intravenous inoculation killed the animals quickly, but nothing very definite was found post-mortem. After subcutaneous injection 34 rabbits became infected. The disease ran its course in 10 to 20 days. 24 hours after inoculation high fever developed, the animal lost flesh and became very ill. Between the twelfth and twentieth day it was killed. Post-mortem were found collections of pus in various situations, cystitis, and purulent conjunctivitis; intramuscular abscess was never seen. From the heart blood and juices of other organs the cocco-bacilli were recovered and grown on agar. See also this *Bulletin*, vol. 10, p. 304.

A. G. B.

BENJAMINS (C. E.). **Eenige vergelijkende gegevens uit de neuskeel-oorheelkundige praktijk op Java en in Nederland. II. Over middenoorontsteking.** [Comparative Data from Rhino-laryngological Practice in Java and Holland. II. Otitis media.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1919. Vol. 59. No. 6. pp. 805–812.

A comparison between the data of the author's specialist practice in Java during the years 1908–10 and in Utrecht during the years 1914–16. During the former period 1,127, and during the latter 2,358, patients came under treatment for diseases of nose, throat or ear. The first point to which the author draws attention in his comparison between the two series of cases is a remarkable difference between the incidence of acute and of chronic otitis media in Java and Holland respectively. The figures regarding the acute disease are given in the table below.

The percentage of acute cases of otitis media in the author's specialist practice is seen to be more than twice as large in Java as in Holland. This greater prevalence of acute otitis media in Java may, in the author's opinion, have some relation to the practice of frequent bathing, and to the great frequency of catarrhal conditions of the upper air passages. The following table shows some of the developments :—

	Mastoiditis.	Mastoid operation.	Subdural abscess.	Myringitis bullosa.	Mortality.
Java	9	3	2	10	0
Utrecht ..	13	5	0	5	0

Figures relating to the duration of illness show that the disease is, on the whole, more benign in Java than in Holland :—

Duration in weeks

	Up to 1	2—3	3—4	4—5	6	More than 6
Java	34	10	4	2	2	1
Utrecht	18	20	20	4	3	9

In Java none of the author's acute cases became chronic ; among his Utrecht cases this happened twice. The proportion of cases in very young children—up to three years—is considerably greater in Java —33 out of 123 cases, the Utrecht numbers being 15 and 114 respectively. The figures relating to chronic otitis media contrast sharply with the foregoing :—

	Otitis Media.		Percentage of all ear, nose, and throat patients.	
	Acute	Chronic	Acute.	Chronic.
Java	123	30	10·8	2·6
Utrecht	114	172	4·8	7·2

As possible factors favourable to the occurrence of a larger proportion of chronic cases, the author cites the following: (1) Lessened resisting power; (2) the nature of the infection; (3) neglect to treat an acute inflammation; (4) repeated middle-ear infection due to adenoids. It is impossible to regard (1), (3) or (4) as likely to be more operative in Holland than in the Indies, and one is driven to the conclusion that the nature of the infection is the important factor. In this connexion the fact that scarlatina is, if not unknown, at any rate exceedingly rare in Java is obviously significant.

F. S. Arnold.

Hennessy (P. H.). **Human Bites.**—*Indian Med. Gaz.* 1920. July. Vol. 55. No. 7. pp. 250–252. With 2 plates.

An account of five cases of human bites in Tamils, in Malaya.

In the last case, a bite on the thumb, a bacteriological examination was made, and a month after the injury spirochaetes and fusiform bacilli were found in the pus from the inflamed parts. The terminal joint became disorganized and the terminal phalanx necrosed, and two weeks later the same fate befell the other two thumb bones. After amputation the wound quickly healed.

In two of the other cases necrosis of bone occurred.

Novarsenobenzol is recommended, and was used in three of the cases.

A. G. B.

Hennessy (P. H.) & Fletcher (William). **Infection with the Organisms of Vincent's Angina following Man-Bite.**—*Lancet.* 1920. July 17. pp. 127–128. With 1 text fig.

Vincent's angina was originally described as beginning with an acute stomatitis or tonsillitis. The fusiform bacilli and spirochaetes which are found have since been shown to be normal inhabitants of the healthy mouth. The same association of organisms has been found in hospital gangrene, tropical phagedaena, noma, lung abscess, foetid bronchitis, and in wounds caused by the teeth.

In the case here described a Tamil was bitten severely by a Malay in the thumb, the nail of which was torn off. When seen a fortnight later the thumb was swollen and indurated. Sinuses led down to fractured bone. An abscess involved the metacarpo-phalangeal joint. The pus from the sinuses contained fusiform bacilli, and "enormous number of spirochaetes in writhing, tangled masses," of several types and sizes. Inoculations of pus were made into a rabbit, but it remained healthy. Blanchard has shown that infection in man does not occur unless the tissues have been injured by an escharotic, such as caustic potash [this *Bulletin*, Vol. 4, p. 36]. After amputation and two injections of novarsenobillon the patient made a good recovery.

A. G. B.

Salisbury (Edward I.). **Fracture of the Femur—A Study of Treatment and Results.**—*Proc. Med. Assoc. Isthm. Canal Zone.* 1917. July–Dec. Vol. 10. Pt. 2. pp. 101–106. With 4 plates.

The author points to the influence of climate on procedure in fracture of the thigh, instancing the application of adhesive plaster to moist and freely perspiring skin, and the use of Plaster of Paris for casts "that may or may not harden, or, if they do, soften within a few hours or

days." There were 54 cases, of which 12 were infants and children; two-thirds were treated by open operation. The fractures were thus divided :—

Compound, 8 ; simple, 46.

Intertrochanteric, 4 ; intracapsular, 2 ; shaft, 44 ; condylar and supracondylar, 4.

Of the 36 operated on, eight were treated by wiring, eight by vanadium steel plates, twelve by intramedullary bone splints, and two (children) by heavy chromic catgut. Of the rest, 16 were treated by extension, combined in five instances with other methods. There were six deaths, in five of which the fracture was compound. As to results, there was good union in every case, except in one, in which union was delayed till anti-syphilitic treatment was instituted. Shortening of three-eighths to one inch remained in 10 cases ; stiff knee joint in three.

The author thinks that where reduction is difficult to effect and maintain, open operation is in order, and internal splints can be used to advantage. For numerous details the paper must be consulted.

Several X-ray photographs illustrate the methods and results.

A. G. B.

Luz (Fernando) & Torres (Octavio). [Translated from the Portuguese by McShane (A.).] **Case of Gundu observed in Bahia, Brazil.** —*New Orleans Med. and Surg. Jl.* 1920. Sept. Vol. 73. No. 3. pp. 100–104. With 4 figs.

The authors' patient was a mulatto, a native of Bahia, aged about 60, from whom no history could be obtained. The patient had " two tumours at the root of the nose ; two swellings, each three centimetres in length and one in width, situated one on each side of the inferior maxilla, and one centimetre above the free border of the latter ; exostosis of the following long bones : ulnas and radii ; tibia and fibula, several ribs, the humeri, clavicle, metatarsal bones, and some metacarpal bones. . . . The feet turned outwards, making an angle of more than ninety degrees ; the inner border of each foot did not follow a straight line, but each border formed an obtuse angle of 160 degrees outwards at the level of the tarso-metatarsal articulations."

Later the patient developed paralysis of the lower limbs and relaxation of the sphincters ; he was transferred to the isolation department and died. It was not practicable to make a complete autopsy, but the head and both legs were removed and photographs were taken.

" The lesions were as follows : piriform tumors of the ascending apophyses of the superior maxillary bones, which encroached slightly on the lower border of the orbit and the nasal fossae, gradually diminishing towards the malar bones ; on the lower maxilla there were two tumours three centimetres in length and one and a half in width, lying parallel with the maxillary border. These tumors were of the same nature as those above described . . . .

" Small exostoses of the cranium, which were perceptible during life, were more evident after death.

" The tibias and fibulas, which presented large exostoses, easily seen in the photograph, were the seat of interesting lesions. The lesions are seen to be clear : the tibias have lost their anterior border entire in their length, and were almost doubled in thickness, the tumours being best developed in the lower two-thirds. There was close union between these bones and the fibulas, which were adherent at the upper and lower ends. The tibial *plateaux* showed exostoses laterally.

"The thickened fibulas seemed to be twisted on their long axis, being thickest in the lower two-thirds. In the upper third we see perfectly the union of these two bones with the tibias.

"Apparently the long lesions are those of osteo-porosis . . . . .

"We made longitudinal sections of one of the tibias, not only to see the shape of the bones, but also to study the medullary canal.

"The dimensions were visibly increased in all directions; the medullary canal was extremely reduced, presenting a small orifice, which was not sharply limited, but was lined by a kind of reticulated bony tissue, the deeper portions of which blanded with the cavity of the bone (rarefying osteitis)."

"On the posterior surface of the tibia, a well developed bony ridge is seen."

Sections of the bony tissue are being studied.

The photographs show the patient's profile in life, his skull, the leg bones and a transverse section of the tibia.

This seems to be the second case of goundou described from America, the first having been reported by MENDES in a mulatto in 1901.

A. G. B.

HENNESSY (P. H.). **An Analysis of over 500 Cases of Genital Chancre in the Native Male.**—*Indian Med. Gaz.* 1920. Sept. Vol. 55. No. 9. pp. 327–329.

The author, who is Medical Officer to the General Hospital, Kuala Lumpur, notes that with all Asiatics of the coolie class, early and radical treatment of syphilis is essential. In this series of cases there were no outward indications of syphilis, such as a secondary rash. Among 519 cases there were 384 Tamils, 69 Chinese, 42 Indians, and 24 Malays. Four-fifths of the men were between 20 and 30. The table shows the site of the lesion in 549 cases.

TABLE I.

	No.
In urethra concealed	1
Within meatus	—
At meatus visible	10
On glans penis	26
On corona glandis	10
In sulcus	67
On prepuce skin	277
On prepuce mucous membrane	50
On frenum praeputii	84
Phimosed prepuce (concealed)	4
Body of penis	18
Root of penis	2
Total	549

"The overwhelming majority secured by the prepuce when both the skin and mucous membrane are included, *i.e.* 327 out of the total of 549, would argue in favour of early circumcision."

The average duration from exposure to onset of symptoms was 8·48 days. In 450 cases the lesion had been present on admission for an average period of 26·4 days. An attempt was made to keep each man in hospital till the sore was healed; many objected and disappeared, but in 406 cases the time necessary for complete healing

averaged 26·3 days. Out of 553 cases 305 were multiple and 248 single sores.

Two methods were employed for the detection of the spirochaete: Fontana's silver-nitrate method, and dark-ground illumination by means of an "Argus" arc lamp. In a single examination of 533 cases the spirochaete was found in 124, a percentage of 18·7. Induration was present in 225 cases and absent in 275. Nearly 50 per cent. of the indurated type showed the presence of the spirochaete.

The Bordet-Wassermann reaction was done in 185 cases, the last of the series; it was positive in 64, negative in 94, anti-complementary or doubtful in 18 and nine. The aim should be to secure a case of syphilis before the reaction is positive. "In ten cases only was this happy combination—a positive spironema pallidum and a negative Wassermann reaction—obtained."

Treatment.—All syphilitic sores and sores clinically "suspicious" were treated with local applications of mercury, with the same drug internally, and with weekly intravenous injections of novarsenobenzol, 0·45 gm. It was sought to give six, but generally only three or four could be given. The results were uniformly good. B.I.P.P. was most useful in septic sores of the penis. Occasionally a soft sore was met with which was resistant to all forms of treatment; in these cases tartar emetic intravenously gr. 1/2 three or four times a week proved beneficial.

A. G. B.

Vann (J. W.) & Groesbeck (B.). **The Prevalence of Venereal Disease in the Dominican Republic.**—*U.S. Nav. Med. Bull.* 1920. Oct. Vol. 14. No. 4. pp. 681–684.

The men selected for the observations here given were a company of the Guardia Nacional Dominicana, the native soldiery and all the inmates of a prison in one of the Dominican towns, 231 in all; they represented the lower and middle classes of the people. The method of serum diagnosis, a combination of the Noguchi and Emery techniques, is given in detail. Of the 74 men of the Guardia Nacional, whose average age was 23, 37 or 50 per cent. gave positive reactions, and of the 157 prisoners 39 per cent. were positive.

"A physical examination of the syphilitic men showed them to be in surprisingly good condition. By far the greater number (90 per cent.) showed no signs of the disease excepting glandular enlargement, and in 12 per cent. of these men only the inguinal glands were involved. None of these men complained of any subjective symptoms. Eight per cent. of the cases showed the symptoms and signs of aortitis, and three cases had gummatous lesions.

"The condition in which the men were found is considered remarkable in view of the fact that so small a number had had any but local treatment. With the disappearance of the chancre all treatment was usually discontinued, and the disease allowed to take its course. One can not but be impressed by the effect of heredity on disease shown here so strikingly. Very few cases of nerve syphilis are seen in this country."

The incidence of syphilis among the adult male Dominicans, as shown by these tests, is about 44 per cent. The incidence of gonorrhoea is estimated at 38 per cent. It is considered that until means have been taken to educate the people and to treat the poor very little can be done to decrease the incidence of the venereal infections.

A. G. B.

THIROUX (A.). **Athrepsie infantile et syphilis congénitale en Annam.**—*Bull. Acad. Méd.* 1920. Nov. 9. Vol. 84. No. 35. pp. 215–217.

The author states that in Annam infantile athrepsia of exclusively syphilitic origin is of frequent occurrence. Children, healthy at birth, are brought to the doctor with diarrhoea and vomiting. The food is blamed, and the supposed error is put right, but the condition grows rapidly worse, ending in death, or in a form of rickets if the child's life is saved. Two cases are here cited. In one, a child of five months, in whom intolerance of food was absolute and emaciation extreme, five cgm. of novarsenobenzol in 2 cc. of water was injected into the muscles of the buttock, and repeated every five days; improvement began after the first injection, and after the fifth the health of the child was restored. In the other case a colleague pointed out the risk of injections, so great was the enfeeblement, but a like result followed; in this instance the mother gave a positive Wassermann. This child, if it had recovered at all without treatment, would have been pigeon-breasted; during the course of treatment the thorax was seen to flatten out. Pigeon-breasted people are very common in the towns of Annam and this is attributed to syphilis.

The author lays stress on the frequency of purely syphilitic enteritis, and thinks that in all cases of infantile athrepsia a Wassermann test should be done on the child or his parents.

A. G. B.

BALFOUR (Andrew). **The Treatment of Smallpox by the External Application of Potassium Permanganate.**—*Jl. Trop. Med. & Hyg.* 1921. Feb. 15. Vol. 24. No. 4. p. 37.

The treatment of smallpox by the external application of potassium permanganate was introduced by DREYER, of Cairo, in 1910, and has been practised chiefly by the Germans. "When the patient is admitted to hospital his whole body is painted over with a freshly-prepared saturated solution (five per cent.) of potassium permanganate. On each successive day the same solution is applied, unless the skin is found too sensitive, in which case a weaker solution is employed, one of 1·5 per cent. being often suitable." The good results are probably to be attributed to the germicidal and oxidising powers of the drug. It appears to be of signal service in lessening the suppurative process. It is also said to prevent complications, the formation of bed sores and the occurrence of general sepsis. The pitting of the skin is reduced. It should be used, at any rate, in severe cases in the tropics, where facilities for proper nursing and attention are lacking, but practitioners should note that DREYER recommends caution in cases where the heart is diseased or feeble.

A. G. B.

CHAPIN (Henry Dwight). **An Epidemic of Kaffirpox in Jamaica. Random Notes of a Tourist.**—*Med. Record.* 1920. Oct. 2. Vol. 98. No. 14. pp. 553–554.

The epidemic began in May. In August the author visited an isolation hospital in the suburbs of Kingston, where 300 patients were seen. These cases differed clinically from both smallpox and chickenpox. The pocks were abundant on the face, and were scattered over the

wrists, arms, body and legs. The palms of the hands and soles of the feet were covered with pocks. In one case vaccination had been done with success after the appearance of the eruption. Pocks were seen in a number of throats. The pustules were unilocular in the cases examined, and there did not appear to be a true umbilication. The pocks were fairly uniform in age. A deep purple staining of the skin persisted for several weeks after scabbing. The patients were only sick at the commencement, with malaise, headache and backache. " It was amusing to see many patients, with face and body covered with pustules, walking about the grounds, half-clad and smoking cigarettes as if nothing were the matter, although they had every appearance of ordinary smallpox." There were three fatal cases, but death, it was thought, was not directly due to Kaffirpox. Infants and young children usually have the disease in a mild form.

The author quotes CASTELLANI and CHALMERS as to the history and geographical distribution of the disease, and its relations with smallpox and chickenpox.

A. G. B.

GOLDSMITH (G. M.) & LOUGHNAN (W. F. M.). **Notes on Three Cases of Alastrim.**—*Jl. Roy. Army Med. Corps.* 1921. Jan. Vol. 36. No. 1. pp. 66–68.

These notes refer to three cases admitted to hospital in Jamaica in May and July, 1920. The disease is said to differ from smallpox in that vaccination affords but slight protection, the severe lumbar pain of smallpox is absent, the secondary fever is very mild or is absent, true umbilication of the scabs is not seen, in adolescents the disease is very mild, scarring is absent, the mortality rate is not more than 1·5 to two per cent. It differs from varicella in that it occurs at all ages, the vesicles tend to become confluent, the stages are more prolonged. The authors say [contrary to CHAPIN, *see* above] that the rash is not seen on the palms or soles.

A. G. B.

MANN (W. L.), HELM (J. B.) & BROWN (C. J.). **An Edema Disease in Haiti. A Preliminary Report.**—*Jl. Amer. Med. Assoc.* 1920. Nov. 20. Vol. 75. No. 21. pp. 1416–1418.

The authors are medical officers in the United States Navy, and the disease described was seen by them among prisoners, especially at Cape Haitien and Port au Prince. The authors write :—

" The clinical manifestations of this disease simulate beriberi, but no paralysis of the extremities has been noted, and the rate of the heart beat is slower than in beriberi. It likewise resembles ' prison,' ' war ' or ' nutritional ' edema, but the Haitian dropsy is apparently more rapid in development, the mortality rate is greater, and a change in diet and environments has not been observed to have any marked effect as a curative. The symptoms and the incidence of the condition under discussion correspond somewhat closely to ' epidemic dropsy,' and may be differentiated from it by the absence of fever."

They saw 3,000 cases, and studied more than 200 necropsies.

" The edema disease is an acute or subacute condition of at present undetermined causation, characterized by the cardinal symptoms of edema, emaciation, weakness, diarrhoea, subnormal temperature and

a slow pulse rate. These symptoms, one or more of which may be absent, exist in varying proportion. The dropsical condition may appear and disappear at irregular intervals."

It was stated that the disease had existed in Haiti for many years, and the informant gave a name by which it is designated. It is chiefly present in the prisons; in some it is common, in others, "under almost identical conditions as to food and climate," it is rare or absent. The disease was at first believed to be limited to prisoners interned for less than three months. Later, cases were noted among the long term prisoners. "Edema has developed in several cases in less than fifteen days after incarceration." As to causation, all investigations and experiments [the details of which are not given] tended to negative the natural assumption that the diet was at fault. The etiology is still under investigation. There is no evidence of any relations to conditions existing prior to confinement. Thus, 40 bandits when captured were in normal physical condition, but 12 days later a case of edema developed, and within seven weeks 25 per cent. were affected.

The notes on symptomatology are based on an intensive study of 50 cases, and the symptoms are taken up in turn. The oedema usually begins on the dorsum of the feet, pits on pressure, and may go on to general anasarca. Diarrhoea occurred in 28 of the cases. It is stated that the stool often consists of five or ten cc. of pus. Emaciation may be extreme, and it is weakness usually which brings the man to the sick bay. The average temperature is 97–97·5°; the average pulse rate 57 per minute. The duration in fatal cases is about 25 days. In the necropsy findings there is nothing characteristic, nor do the laboratory findings help to a diagnosis.

A. G. B.

Willmot (Frederick C.) & Robertson (George W.). **Senecio Disease or Cirrhosis of the Liver, due to Senecio Poisoning.**—*S. African Med. Rec.* 1920. Sept. 25. Vol. 18. No. 18. pp. 346–348. and *Lancet.* 1920. Oct. 23. pp. 848–849.

This disease in man seems to be the same as that described by Theiler in horses [*see Trop. Vet. Bull.*, Vol. 8, pp. 67–68], which, as the authors say, is known as Molteno disease in South Africa, Winton's disease in New Zealand and Pictou disease in Nova Scotia.

In 1918 the attention of the Union Health Department was called to the fact that whole families in the George District of the Cape Province suffered from a complaint, the chief symptoms of which were abdominal pain and vomiting, with ascites. Investigation showed that the ragworts, known as *Senecio ilicifolius* and *S. burchelli*, grew as weeds in the wheat fields and that, in thrashing, the seeds and portions of the plants remain behind and are sold with the wheat. The disease had existed for ten years and some 80 cases, many of them fatal, had occurred. The patients invariably belonged to the poorer class of Europeans, whose staple food was bread.

"The commencing symptoms are generally those of digestive derangement, resembling those of the ordinary dyspepsia, with pain in the stomach, sometimes worse after meals. The onset may be either gradual or rapid. It is difficult to obtain an accurate history from persons of the poor white class, but our information goes to show that the period between onset and death may be from 14 days to two years or more. . . . The first noticeable symptom is nausea, generally followed by vomiting, and attacks of acute pain in the stomach; these symptoms continue at

intervals, becoming more frequent and severe as the disease progresses. Diarrhoea may or may not be present; blood is often vomited or may be passed in the stools; the liver soon becomes enlarged, and ascites rapidly develops in all severe cases; in no fatal case investigated was dropsy absent. The temperature is generally normal, or subnormal; signs of collapse often come on quite early in the disease. Distension of the abdomen is considerable, and frequent "tapping" has been resorted to by medical men in attendance."

Most of the cases were in Europeans and the majority in children; details of five are given. The prognosis was generally bad. The post-mortem appearances of organs from fatal cases are thus described:—

"The liver, in what seemed to be a recent fatal case of this disease in the George district, was increased in size, edges rounded, and, on the surface, well-defined, slightly raised areas of a deeper colour than normal were noted. On cutting into these portions, they were found to be engorged with blood, and to vary in size from that of a hazel-nut to a walnut.

"Microscopic examination of sections showed the capillaries between the hepatic cells to be distended with blood, the central venule dilated, and the liver cells reduced in size; some containing pigment of a brown colour, and others fatty particles. The more advanced cases showed similar sized areas, but were of a lighter colour than the liver substance, and, on microscopic examination, the usual round-celled infiltration and formation of new fibrous tissue—met with in cirrhosis of the liver from other causes—was the most marked change.

"The stomach was as a rule normal in size. . . . .

"In the specimens examined in the Government Laboratory, numerous minute, dark-coloured, circular spots were noticed on the inner surface, varying in size from that of a pin's head to that of a pea. The area of the stomach affected was always the larger curvature, beginning 1½ inches from the pylorus, and extending along the lower part of the larger curvature for three inches. On washing under the tap, these dark-coloured spots appeared as tiny ulcers, some very superficial, but the majority extending through the mucous coat; the bases appeared covered with haemorrhage from small eroded vessels.

"With the exception of marked congestion of the kidneys, the other organs were normal."

A number of feeding experiments were made upon guinea-pigs and white rats, with suspected meal and also dried flower heads and seeds of both species of plants. All the animals became much emaciated, and one guinea-pig out of 12 fed on Senecio died in ten weeks with hepatic cirrhosis almost identical with that in the human subject, and minute ulcers in the pyloric portion of the stomach; similar appearances were seen at the post-mortem examination of three white rats, similarly fed. [The results of feeding on suspected meal are not given.]

The incompleteness of these investigations is realized; further enquiry and research are stated to be necessary.

A. G. B.

CUSHNY (Arthur R.) & WATT (Henry E.). **Senecio Poisoning.**—*Lancet.* 1920. Nov. 27. pp. 1089–1090.

In reference to the above paper the authors write that some ten years ago one of them investigated the chemistry of *Senecio latifolius* at the Imperial Institute, and isolated two alkaloids, senecifoline and senecifolidine, which were found to induce the same effects in animals

as had previously been described by the veterinary investigators of the disease in cattle. When small doses were repeatedly given, at first there were no effects, but later the animal began to lose weight; diarrhoea, vomiting, general weakness, staggering gait, and apathy followed, developing into stupor, with low temperature and failure of respiration. Blood was often vomited or passed in the stools. A certain amount of ascites was generally present in cats. The liver was swollen, and presented the appearance of early cirrhosis, but the animals did not live long enough to develop this condition. *Senecio jacobea*, or ragwort, was then tried, and no symptoms were produced, but in later experiments the effects were identical with those of the former species. The same applies to *S. vulgaris*, the common groundsel.

The disease appears to occur in Norway, but to be rare in England. It is not likely to present itself in countries where agriculture and milling are even moderately developed.

A. G. B.

BEQUAERT (J.). **Action pathogène d'un Champignon parasite des Bambous en Afrique Centrale.**—*Bull. Soc. Path. Exot.* 1920. July 7. Vol. 13. No. 7. pp. 486–489.

The author relates that in May, 1914, he was camped at about 2,000 metres on the north-west flank of Ruwenzori, engaged in the study of the flora. Above him lay the zone of bamboos, *Arundinaria alpina*, K. Schumann, which are found in similar situations from Abyssinia to Lake Nyasa. These bamboos do not form impenetrable forests, and their branches support an abundant epiphytic flora. On one occasion he found a very large fungus, almost 30 cm. in diameter, fixed by a narrow base to one of the bamboo nodes. It was deep brown, or almost black, and hard, though fleshy. The two natives who were with him as guides and porters refused to cut the bamboo. It was therefore cut by the author and his native boy, who placed it in a sack and on the head of one of the porters, to his extreme disgust. The reason did not appear, as the language was not known. On arrival in camp the sack was put in the author's tent under his bed. In the night he was seized with violent colic and vomiting, diarrhoea and pain in the joints, and these symptoms persisted through the following day, during which he remained in bed. Soon to his other ills was added violent headache ; there was no fever. The next day the symptoms continued till news was brought that the native who carried the specimen was similarly attacked, and the cause was attributed by the villagers to the fungus, which they knew well and considered very dangerous. The author became quickly convinced of the truth of this explanation, and had the sack and its contents dumped in a ravine some distance from the camp. The next day he was able to move camp, and soon he was quite recovered.

He is unable to describe the fungus in technical language, and did not see it again, but he believes it to be the aecidian form of a rust fungus ; and notes that some of the exotic forms grow to a large size. The author has searched the literature, but has not found any record of a similar fungus of bamboos. He goes on to discuss an affection described by BLANCHARD, in which an affection of the skin is produced by the spores of a fungus of canes. He attributes his own symptoms to emanations from the fungus.

[Sir David Prain, Director of the Royal Gardens, Kew, writes that there is little room for doubt that this fungus is *Engleromyces Goetzii*, Henn. It is known on bamboos in British East Africa, Uganda and Nyasaland, and probably occurs also in the Tanganyika Territory. No report has reached Kew of its possessing poisonous qualities.]

A. G. B.

Mackie (F. P.). [**Stibenyl.**] [Correspondence.]—*Indian Med. Gaz.* 1921. Feb. Vol. 56. No. 2. pp. 76–77.

Major F. P. Mackie reports unfavourable—"almost alarming"—results obtained in the use of Messrs. Allen and Hanbury's "Stibenyl" in three cases of kala azar. Two received 0·1 gm. intravenously as directed. Both had a rise of temperature to over 101° with vomiting, purging and collapse. Each patient, on recovery, received 0·033 gm. and this was followed in one case by a rise of temperature. The third case, an advanced one, received 0·066 gm. and died the same evening of heart failure, a very infrequent cause of death in kala azar. The author has returned temporarily to the use of sodium antimony tartrate.

A. G. B.

REVIEWS.

STITT (E. R.). [A.B., Ph.G., M.D., Sc.D., LL.D., &c.] **Practical Bacteriology, Blood Work and Animal Parasitology, Including Bacteriological Keys, Zoological Tables and Explanatory Clinical Notes.** xi. + 633 pp. With 1 plate and 177 text figs. Sixth Edition, Revised and Enlarged. 1921. London: H. K. Lewis & Co., Ltd. [Price 20s. net.]

The rapidity with which new editions of this book are called for testifies to its popularity. The present volume represents the sixth edition within the space of twelve years and, in spite of considerable amplifications, it maintains a moderate girth.

In keeping abreast with scientific progress, the work has become more ambitious in order to accommodate a mass of fresh information, and it would be interesting to learn the system which the author employs in order to collect and digest all his raw material.

The 633 pages are as crammed with information, as varied in scope and interest, as is Whitaker's almanack; every inch is utilized; the inside front cover paper and fly-leaf are occupied with a compendium of the commoner communicable diseases, the end fly-leaf with subjects as diverse as temperature scales and the metrical units in common use. On the inside back cover there appears an elaborate table of sugar reactions of the more familiar intestinal organisms. There is little in medicine—especially tropical medicine—which has escaped notice; the microscope, the necessary laboratory apparatus, the preparation of media, not omitting a modern explanation of the hydrogen-ion concentration in reference to standardization: all are adequately described. Staining methods are noted in very considerable detail, as are also the classification of bacteria, the commoner pathogenic organisms, and the bacteriology of water, air and milk. Not content with the more mundane affairs, the work plunges into the complex subject of immunology and unfolds the technique of the agglutination and precipitin tests, the Wassermann reaction and its modifications. Vaccine therapy, the opsonic index, anaphylaxis, even the Abderhalden test, come in for consideration.

The second part, dealing with the blood and its morbid states, is particularly full; all aspects of this important subject are dealt with, including the tests for iso-haemolysins and agglutinins and their bearing upon blood-transfusion—information at present unobtainable elsewhere in such a condensed form.

Part III.—Animal parasitology with a short account of medical protozoology—represents a résumé of all the best known works on the subject; it is, in fact, BRUMPT, CALMETTE, PATTON and CRAGG, ALCOCK, etc., in a condensed form.

The illustrations throughout the book are small, but as a general rule good, though criticism may be levelled at the small sketches illustrating this particular section. For instance, in Fig. 129, although the outlines of the particular arthropods are accurate enough, the magnification employed should be stated. Thus *Porocephalus*, which is 5 cm. in length, appears actually smaller than *Demodex* (0·3 mm.), though in reality the latter is 1/150th part of its size. This point should receive attention in future editions. The drawings of fleas in Fig. 135 may be described as grotesque.

The concluding portion—Part IV.—deals with clinical bacteriology and parasitology of the various body fluids and organs—in itself a very large subject, though it manages to embrace infections of the eye, ear and throat. The sputum, urine and faeces are dealt with in the same encyclopaedic manner; physiological subjects, such as the determination of renal efficiency, receive due notice. Methods of blood and gastric analysis, examination of pus, war-wounds, skin infections and cerebrospinal

fluid are also dealt with; the latter section is especially welcome as the information in most modern text-books is extraordinarily inadequate.

The reader who has glanced through this rapid survey may think that the subject-matter has covered almost the whole field of medicine, but the fund of information is by no means exhausted, for an appendix of 72 pages which follows contains more details in tabloid form — instructions for section cutting, preparation of stains, recent knowledge on renal efficiency, anatomical normal weights, physiological standards of the blood, cerebrospinal fluid, etc.

Finally, there is arranged under an alphabetical index a digest of all the particulars which have gone before. Mistakes are singularly few and the zoological nomenclature has been carefully considered. We may note that *Ancylostoma* is spelt with a *c* in the modern accepted manner. In Fig. 106 we note that *Blanfordia* is printed as *Blandfordia*, and on p. 505 a whole section dealing with the microscopic examination of faeces has been transposed beneath a paragraph describing the urine in pancreatic disease.

Apart from these minor blemishes, which are hardly avoidable in such a book, it can truly be stated that no laboratory worker, up-to-date practitioner or aspiring student can afford to be without this work. It appeals to them all, containing as it does accurate information upon so many diverse medical subjects. We therefore heartily speed the book upon yet another lap of its successful career.

Philip Manson-Bahr.

Lang (William Dickson). [M.A., Sc.D.] **A Handbook of British Mosquitoes.**—vi. + 125 pp. With 132 text figs. and 5 coloured plates. 1920. London: Printed by order of the Trustees of the British Museum and sold by Longmans, Green & Co., B. Quaritch. Ltd., Dulau & Co., Ltd., and at the British Museum (Natural History). [Price 20*s*.]

It is probably no exaggeration to say that, owing to the war, there has been a wider recognition on the part of the British public, of the association of mosquitoes with certain diseases. The economic importance of these insects is forcibly impressed upon all who come in frequent contact with ex-soldiers suffering from malaria, or who live in districts where anti-malaria measures are being conducted. The fact that mosquitoes occur in this country, therefore, will arouse an interest in our British species in many people who previously would have given no thought to the matter; but without an easy means of obtaining information on the subject, or of overcoming the initial difficulty of identification, this interest would, in most cases, quickly be suppressed.

Dr. Lang's object in writing this handbook has been to provide such a means of identification, and it can justly be said that his treatment of the subject should enable any person of average intelligence, by careful observation and perseverance, to recognise the great majority of the British species in both adult and larval stages. With lucidity and accuracy, aided by Mr. A. E. Terzi's numerous and beautiful illustrations, he directs the reader step by step through the various examinations necessary for specific determination.

Apart from brief concluding remarks on evolution, and doubtful and fossil British mosquitoes, the work is divided into three sections: (1) Introductory, (2) Identification, and (3) Systematic account.

The first section deals with the differentiation of mosquitoes from gnat-like flies, the life-history, and the external morphology of the adults and larvae. The morphology is discussed only to the extent necessary for purposes of identification; the nomenclature of the parts is clearly indicated, and, in so far as it relates to the clypeal hairs of the larva, is deserving of the attention of specialists.

Having thus provided instruction sufficient to allow the reader to appreciate the subsequent directions, the author opens his section on identification with an account of the external sexual differences. Generic differentiation under the separate headings, males and females, is then considered, and is followed by specific differentiation in those genera containing more than one British representative. The identification of the larvae is treated on similar lines; it extends not only to the species but, so far as they are known, to the different instars of each species. Tables summarising the various distinguishing characters discussed in this section are given in sequence throughout the text. The practical manner in which this important part of the subject has been handled should ensure the volume a much wider demand than is indicated by its title. Medical officers and others abroad, to whom a knowledge of the local mosquito fauna is of importance, will find the information contained in this section of much help in indicating the taxonomic values of various characters. Especially is this the case in regard to the separation of species, whether as adults or larvae; but an exaggerated value—perfectly legitimate in view of the scope of this work—is placed upon some of the characters used for generic separation, and therefore to such workers the author's note that these 'do not necessarily hold outside the British species' must be emphasized. The diagnostic importance of the male hypopygial structures rightly receives considerable attention and several figures denoting differential specific characters are given; but unfortunately very little information regarding the technique necessary for the determination of such characters is provided, and it is doubtful whether the amateur will be able to employ this criterion in practice.

In the third section the known British species—21 in number—are systematically reviewed, each species being considered in regard to its synonymy, chief characters, habits, and distribution.

H. F. Carter.

Rideal (Samuel) [D.Sc.(Lond.)] & Walker (J. T. Ainslie) [Capt., R.A.M.C. (T.F.)]. **Approved Technique of the Rideal-Walker Test.**—12 pp. 1921. London: H. K. Lewis & Co., Ltd. [Price 1*s.* net.]

This brochure gives a clear and concise description of the well-known Rideal-Walker method of determining the germicidal value of disinfectants. In spite of much criticism and many suggested modifications, this latest description of the details of the test by its authors remains much the same as that originally published in 1902. The modifications introduced seem to be three in number: (1) The test is now completed within ten minutes, instead of the original 15 minutes, four cultures only, instead of six, being taken from each "medication" tube and the standard carbolic tube; (2) the medication and carbolic tubes now each contain 5 cc. of the solutions, and are inseminated with 0·5 cc. of the typhoid broth culture, instead of the original 3 cc. and three drops respectively; and (3) the platinum loop now used for inoculation is four mm. in diameter instead of three mm. Modifications 2 and 3 certainly render the test more stringent, and the use of a measured volume of culture in the place of the rough-and-ready "three drops" tends towards greater accuracy and better comparison. The first modification, however, the reduction of the time limit, while being more economical in time and material, further penalizes disinfectants which are at all slow in action, and almost restricts the test to substances belonging to the phenol series. We doubt whether in practice there is any need, as a rule, for a disinfectant to be required to exert its action within so short a time as ten minutes. We think the authors would have been well advised to have described exactly the tint they regard as the proper one in adjusting the reaction of the standard broth employed by means of phenolphthalein, as this indicator with broth gives results which are far from being sharp and definite. The test is recommended to be carried out

at a temperature of 15° C.–18° C., the special test-tube rack being provided with a water bath for this purpose. But the reader should have been warned that if he determine his carbolic strength at 18° C., and then proceeds to do a test at 15° C., he will probably fail to obtain a reading, for this difference of temperature may entail a 10–20 per cent. difference in the carbolic strength required, particularly as the time limit of the test has been reduced, and only four cultures, instead of the original six, are now made from the medication and carbolic tubes.

In conclusion, we must take exception to the use of the term " approved " in the title. The ordinary reader, we believe, would take this to mean " generally adopted " or " approved by some recognized body," which is not the case. " Approved " here merely means " recommended by the authors," and so important a body as the British Disinfectant Manufacturers' Association has not so far adopted the technique described.

R. T. Hewlett.

Walker (J. T. Ainslie) [Capt. R.A.M.C. (T.F.)]. **Intestinal Disinfection. With a Note on its Practical Attainment.**—12 pp. 1920. London: The Universal Medical Periodicals, Ltd., 36–38, Whitefriars Street, E.C.4. [Price 6*d.* net.]

In this brochure the author records his discovery just before the war of an efficient intestinal disinfectant. The substance is Trimethol, or in full, trimethylomethoxyphenol, the formula of which is given. It is administered in tablet form, produces no toxic effect, and does not interfere with digestion. The author states that it has been used with conspicuous success in the treatment of auto-intoxication due to intestinal putrefaction, non-amoebic dysentery, acute gastro-enteritis, acute and chronic colitis and intestinal fermentation, and gives references chiefly to American journals. A more recent product is " Dimol," which is even superior, and has an R.W. coefficient of 35. He appears to accept fully the view that many of the ills to which flesh is heir are attributable to absorption of toxic products from the alimentary canal, the product of bacteria, and that such ills can be prevented or arrested by the death of the bacteria. Professor R. T. Hewlett contributes a hopeful introduction, in which he says that Dimethol—which appears to be the fuller name—has already been used clinically with encouraging results.

A. G. B.

Grall (Ch.) and Clarac (A.). **Traité Pratique de Pathologie Exotique Clinique et Thérapeutique. IV. Diarrhées, Dysenteries, Hépatite endémique, Abcès du foie.** Par les docteurs Grall, Léger, Mathis.—766 pp. With 131 text figs. 1920. Paris: Librairie J.-B. Baillère et Fils. 19, rue Hautefeuille. [Price 30 francs.]

The present volume by Drs. Grall, Léger and Mathis is the fourth of the series, though not in order of publication; it is an ambitious work, and occupies, irrespective of the index, no less than 755 pages. The diseases it deals with, though important, constitute but a small part of the whole of tropical medicine; but the subject matter is so overloaded as to render the intimate study of its pages more a burden than a pleasure. The detailed recital of the many views upon the etiology of dysentery, however valuable they may be considered to be from the historical viewpoint, is no longer essential; so many theories have been discarded that, at the most, a brief reference to them is all that is necessary.

Should the reader be in quest of the most recent information upon sprue, for example, or, as the authors prefer to call it, *Diarrhée chronique endemique*

"*dite de Cochin Chine*," he will surely be persuaded that *Strongyloides stercoralis* plays a most important part in the etiology of this disease, for no less than 24 pages are devoted to a consideration of the morphology, zoological position and life-history of this helminth, while a few pages further on an equally elaborate account is given of intestinal mycosis, apparently a separate entity, in which the inevitable long list of Monilias bearing euphonious names is recounted. At length, after traversing 98 pages upon this subject, one has to confess that no clear impression is obtained of the actual disease, generally known as sprue.

The handling of amoebiasis is open to the same criticism. The enumeration of the many spurious species of entamoebae which have been described, such as *Entamoeba undulans*, *E. hominis*, *E. tropicalis* and others, whose true nature has recently been explained, does not make for simplicity; it would have been much better for posterity, even at the cost of some sacrifice, were these pseudonyms consigned to perdition.

The subjects of hepatic abscess and amoebic hepatitis occupy no less than 233 pages; the portion dealing with the treatment is minutely and carefully laboured. In the treatment of amoebic dysentery, omission of any reference to emetine bismuthous iodide may cause some surprise.

The last 40 pages are devoted to a consideration of dysentery due to intestinal flagellates and other organisms; and it is more than doubtful whether the views of Léger upon the pathogenicity of *Trichomonas*, *Enteromonas hominis*, *Octomitus hominis* and other flagellates which, from time to time, have been described, will gain general acceptance from English readers. The same may be said of the chapter devoted to spirochaetal dysentery, which is treated as an indisputably distinct disease.

It is a matter for regret that this very complete and exhaustive exposition of the tropical diarrhoeas and dysenteries cannot be reviewed more favourably, for its compilation must have necessitated very considerable care and studious research, but it shows that complete lack of the critical spirit which is all too common in tropical medicine, an infusion of which would have not only curtailed space, but have made the book more attractive from every point of view. At present this confused account serves to mystify, rather than guide, the sincere student in a most difficult subject.

Unfortunately, also, the illustrations are badly reproduced. In figure 24 the nebulous masses portraying entamoebae in section can only be identified with great difficulty, while one could pardonably misinterpret figure 30 as an aeroplane photograph of the Sinai desert, instead of, as it is meant to be, an amoebic ulceration of the gut.

Philip Manson-Bahr.

REPRINTS AND PAMPHLETS RECEIVED.

BOYD (Mark F.). Observations upon *Trichomonas Intestinalis in Vitro*.—Reprinted from the *Jl. Parasit.* 1919. Mar. Vol. 5. pp. 132–136.

CAWSTON (F. G.). Antimony in Leprosy.—Reprinted from *Brit. Med. Jl.* 1920. Dec. 4th. pp. 855–856.

VAN CLEAVE (H. J.). Two New Genera and Species of Acanthocephalous Worms from Venezuelan Fishes.—Reprinted from the *Proc. of the U.S. Nat. Museum.* Vol. 58. pp. 455–466. With 2 plates.

CORT (Wm. W.) & MCDONALD (J. Daley). Amoebic Dysentery in California.—Reprinted from *Jl. Infect. Dis.* 1919. Dec. Vol. 25. pp. 501–508.

CREMONESE (Guido). La malaria Fiumicino e il Prof. Grassi.—48 pp. 1921. Rome: Tipografia C. Lucci.

DRUMMOND (John Cecil), GOLDING (John), ZILVA (Sylvester Solomon) & COWARD (Katharine Hope). The Nutritive Value of Lard.—Reprinted from the *Biochemical Jl.* 1920. Dec. Vol. 14. No. 6. pp. 742–753. With 1 plate and 7 text figs.

GILL (C. A.). Malaria in England with Special Reference to the Rôle of Temperature and Humidity.—Reprinted from the *Jl. of Hyg.* 1921. Jan. 12. Vol. 19. No. 3. pp. 320–332. With 1 map in text.

GUNN (Herbert). Amebic Gall Bladder Infections with Operation.—Reprinted from the *California State Jl. of Med.* 1921. Jan.

HEHEWERTH (F. H.) & KOP (W. A.). The Wassermann Test in Patients Affected with Malaria in the Tropics.—Reprinted from *Jl. of Hygiene.* 1921. Jan. 12. Vol. 19. No. 3. pp. 277–282.

JORDAN (Karl) & ROTHSCHILD (N. Charles). On *Ceratophyllus fasciatus* and some Allied Indian Species of Fleas.—Reprinted from *Ectoparasites.* 1921. Jan. Vol. 1. pp. 178–198. With 30 text figs.

KOFOID (Charles Atwood). A Critical Review of the Nomenclature of Human Intestinal Flagellates, Cercomonas, Chilomastix, Trichomonas, Tetratrichomonas, and Giardia.—Reprinted from *University of California Publications in Zoology.* 1920. June 28. Vol. 20. No. 6. pp. 145–168. With 9 text figs.

———. On the Prevalence of Carriers of *Endamoeba Dysenteriae* among Soldiers Returning from Overseas Service.—Reprinted from *New Orleans Med. and Surg. Jl.* 1920. Vol. 73. No. 1. pp. 4–11.

———. Hookworm and Amoebiasis in California.—Reprinted from the *California State Jl. of Med.* 1920. Sept. 13 pp.

——— & BARBER (Marshall A.). Rapid Method for Detection of Ova of Intestinal Parasites in Human Stools.—Reprinted from *Jl. Amer. Med. Assoc.* 1918. Nov. 9. Vol. 71. pp. 1557–1561.

———, BOECK (W. C.), MINNICH (D. E.) & ROGERS (J. H.). On the Treatment of Giardiasis in Rats with Arsenobenzol.—Reprinted from *Jl. Med. Res.* 1919. Jan. Vol. 39. No. 3. (New Series Vol. 34. No. 3). pp. 293–299.

——— & KORNHAUSER (Sidney I.) Structure and Systematic Relationship of the "Iodine Cysts" from Human Feces.—Reprinted from *Milit. Surgeon.* 1919. July. 14 pp. With 25 text figs.

KOFOID, KORNHAUSER & PLATE (J. T.). Intestinal Parasites in Overseas and Home Service Troops of the U.S. Army. With Special Reference to Carriers of Amebiasis.—Reprinted from *Jl. Amer. Med. Assoc.* 1919. June 14. Vol. 72. pp. 1721–1724.

——, —— & SWEZY (Olive). Criterions for Distinguishing the Endamoeba of Amebiasis from Other Organisms.—Reprinted from *Arch. Intern. Med.* 1919. July. Vol. 24. pp. 35–50. With 43 text-figs.

—— & SWEZY (Olive). On the Morphology and Mitosis of *Chilomastix mesnili* (Wenyon), a Common Flagellate of the Human Intestine.—Reprinted from the *University of California Publications in Zoology*. 1920. Apr. 23. Vol. 20. No. 5. pp. 117–144. With 3 plates and 2 text figs.

—— & TUCKER (John P.). On the Relationship of Infection by Hookworm to the Incidence of Morbidity and Mortality in 22,842 Men of the United States Army at Camp Bowie, Texas, from October 1917 to April 1918.—Reprinted from *Amer. Jl. Hyg.* Baltimore. 1921. Jan. Vol. 1. No. 1. pp. 79–117.

LOW (George C.) & O'DRISCOLL (Elizabeth J.). Further Researches upon Antimony in the Treatment of Filariasis.—Reprinted from the *Lancet*. 1921. Jan. 29. 4 pp.

DE MELLO (Froilano). Contribution a l'étude de la faune parasitaire de l'intestin d'*Hodotermes viarum*, Koenig, de Coimbatore (Inde Anglaise).—Reprinted from *Annaes da Academia Polytechnica do Porto*. Vol. 14. 5 pp. With 1 plate.

——. Notes sur quelques Trichonymphides de l'Inde et Ceylon.—Reprinted from *Annaes da Academia Polytechnica do Porto*. Vol. 14. 2 pp.

—— & ALVARES (Armando). Um caso de blastomicose com abscessos múltiplos.—Reprinted from *A Medicina Moderna*. No. 287. 46 pp.

MURRAY (W. Ansley). Analysis of 140 Weil-Felix Reactions carried out at the Government Laboratory, Durban, between June 1st and October 1st, 1920.—*S. African Med. Rec.* 1920. Nov. 13. Vol. 18. No. 21. pp. 418–419.

NEWCOMB (Clive). On an Outbreak of Relapsing Fever in Turkey in 1918.—Reprinted from *Indian Med. Gaz.* 1920. June. Vol. 55. No. 6. 32 pp. With 1 chart.

SHAHA (Brajaballav). Treatment of Kala-Azar by Intra-Muscular and Oral Medication.—Reprinted from *Calcutta Med. Jl.* 1920. Oct. 14 pp.

WENYON (C. M.). Observations on the Intestinal Protozoa of Three Egyptian Lizards, with a Note on a Cell-Invading Fungus.—Reprinted from *Parasitology*. 1920. Dec. Vol. 12. No. 4. With 2 plates and 2 text figs.

ZILVA (Sylvester Solomon). The Action of Ozone on the Fat-Soluble Factor in Fats.—Reprinted from the *Biochemical Jl.* 1920. Dec. Vol. 14. No. 6. pp. 740–741.

—— & MIURA (Masataro). A Note on the Relative Activity of the Fat-Soluble Accessory Factor in Cod-Liver Oil and Butter.—Reprinted from the *Lancet*. 1921. Feb. 12. p. 323.

Note.—On direct application (not through agents or booksellers) any of the foregoing reprints or pamphlets will be sent on loan to any part of the world, the Bureau paying outward postage.

BOOKS AND REPORTS RECEIVED.

MANSON'S TROPICAL DISEASES. A Manual of the Diseases of Warm Climates. Edited by Philip H. MANSON-BAHR, D.S.O., M.A. M.D. (D.T.M. and H.) Cantab., M.R.C.P. Lond., Physician to the Hospital for Tropical Diseases, London, etc. Seventh Edition, Revised and Enlarged.—xvi+960 pp. With 21 coloured plates, 6 half-tone plates, 404 figures in the text, and 31 charts. 1921. London, New York, Toronto and Melbourne: Cassell & Co., Ltd. [Price 31s. 6d. net.]

AUSTRALIAN INSTITUTE OF TROPICAL MEDICINE. Townsville, Queensland. Yearly Report from January 1st to December 31st, 1919. [P. A. MAPLESTONE, Acting Director.] 18 pp. With 4 charts and 1 map. Printed and Published for the Government of the Commonwealth of Australia by Albert J. Mullett, Government Printer for the State of Victoria. [Price 9d.]

EGYPT. Ministry of the Interior. Department of Public Health. Seventh Annual Report on the Ophthalmic Section, 1919. [A. F. MACCALLAN, Director of Ophthalmic Hospitals.] 46 pp. With 5 charts. 1920. Cairo. Government Press. Government Publications Office, Old Ismailia Palace, Sharia Qasr el Aini. [Price P.T.5.]

EGYPT. Report of Investigations on Pellagra among Turkish Prisoners of War, in Egypt, 1920, by Major A. C. HAMMOND-SEARLE, R.A.M.C. and Capt. A. G. STEVENSON, R.A.M.C., with a Bacteriological Report by Lieut.-Col. P. J. MARETT, R.A.M.C. 66 pp. With 6 charts and 4 tables. Alexandria: Whitehead Morris, Limited.

MEDICAL RESEARCH COUNCIL. (Privy Council), Special Report Series, No. 59. A Report on the Occurrence of Intestinal Protozoa in the Inhabitants of Britain with Special Reference to *Entamoeba histolytica*. 71 pp. 1921. London: Published by His Majesty's Stationery Office. [Price 2s. net.]

MINISTRY OF HEALTH. Reports on Public Health and Medical Subjects. No. 3. The Progress and Diffusion of Plague, Cholera and Yellow Fever throughout the World, 1914–1917. [By R. Bruce Low, with an Introduction by Sir George NEWMAN.]—xv+276 pp. 1920. London: H.M. Stationery Office. [Price 7s. 6d. net.]

SOUTH AFRICAN INSTITUTE FOR MEDICAL RESEARCH. Annual Report for the Year ended December 31st, 1919. By Wilfred WATKINS-PITCHFORD, M.D. (Lond.); F.R.C.S. (Eng.); D.P.H. (Oxon.), Director. 55 pp. With 2 illustrations. Johannesburg: Published by the South African Institute for Medical Research, P.O., Box 1038.

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